

OCTOBER, 1949

# *The Review of Gastroenterology*

OFFICIAL



PUBLICATION

NATIONAL GASTROENTEROLOGICAL ASSOCIATION

**An Unusual Complication Following Radical Pancreaticoduodenectomy**

**Biotoxic Intestinal Conditions of the Putrefactive Type**

**Lipotropic Agents in the Treatment of Diabetes Mellitus**

**Further Studies on Liver Function Tests in the Aged**

VOLUME 16

NUMBER 10

**With the price of Perandren  
only  $\frac{1}{5}$  of its original cost,  
you now can make available  
to a wider group of patients  
the anabolic effects as well as  
the specific sexual effects of  
Ciba's brand of Testosterone  
Propionate, U. S. P. XIII. Write for  
clinical reports and literature.**

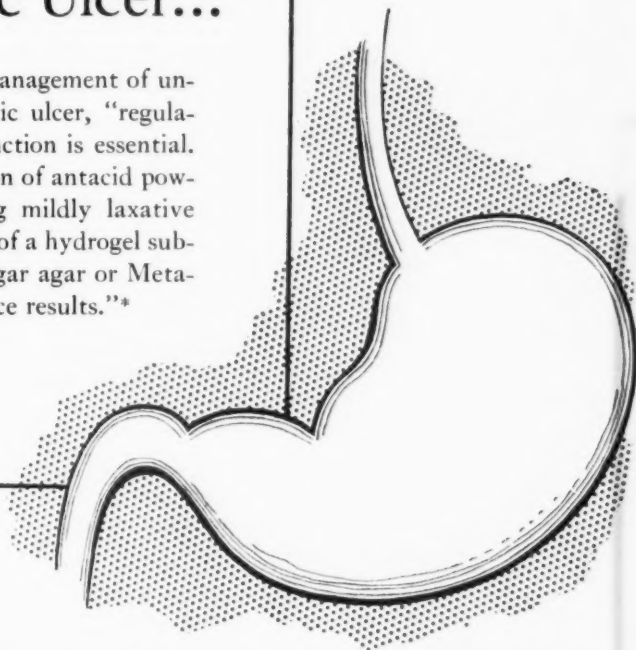
**Ciba**

**PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY**

**PERANDREN • T.M. Reg. U. S. Pat. Off. 2/1514M**

## Bowel Regulation in Peptic Ulcer...

In the medical management of uncomplicated peptic ulcer, "regulation of bowel function is essential. . . . A combination of antacid powders . . . having mildly laxative effects or the use of a hydrogel substance, such as agar agar or Metamucil, will produce results."\*



By furnishing a water-retaining, gelatinous residue in the large bowel, Metamucil acts gently without irritation to promote smooth, normal evacuation.

## METAMUCIL®

is the highly refined mucilloid of *Plantago ovata* (50%), a seed of the psyllium group, combined with dextrose (50%) as a dispersing agent.



**SEARLE** RESEARCH IN THE SERVICE OF MEDICINE

\*Gerendasy, J.: Modern Treatment of Peptic Ulcer, J. M. Soc. New Jersey 43:84 (March) 1946.

*Kindly mention the Review when writing to Advertisers*

**More rapid relief**  
*of gastric hyperacidity*



In less than a minute, Syntroge<sup>l</sup> tablets bring relief to the patient with gastric distress due to hyperacidity. The highly adsorptive aluminum hydroxide and rapidly neutralizing calcium carbonate restore gastric pH close to neutral without gastric alkalosis and acid rebound. These highly effective antacids are combined with magnesium peroxide and Syntropan 'Roche' to help maintain normal peristalsis. Bottles of 50, 100, 250 and 1,000 mint-flavored tablets.

HOFFMANN-LA ROCHE INC. • NUTLEY 10 • N. J.

**Syntroge<sup>l</sup>**

**'Roche'**

*Kindly mention the Review when writing to Advertisers*



## The REVIEW of GASTROENTEROLOGY

(INCORPORATING THE AMERICAN JOURNAL OF GASTROENTEROLOGY)

*The Pioneer Journal of Gastroenterology, Proctology and Allied Subjects  
in the United States and Canada*

VOLUME 16

OCTOBER, 1949

NUMBER 10

### CONVENTION NUMBER

### C O N T E N T S

	Page
Editorial Board .....	746
General Information .....	748
An Unusual Complication Following Radical Pancreaticoduodenectomy <i>Alexander J. A. Campbell, M.D., F.I.C.S. and Stanley Mikal, M.D.</i>	757
Biotoxic Intestinal Conditions of the Putrefactive Type <i>Anthony Bassler, M.D., F.A.C.P., LL.D.</i>	764
Lipotropic Agents in the Treatment of Liver Dysfunction of Diabetes Mellitus <i>Julius Pomerance, M.D. and Victor Levine, B.S.</i>	771
Psychosomatic Aspects of Pruritus Ani..... <i>Alfred J. Cantor, M.D.</i>	778
Further Studies on Liver Function Tests in the Aged <i>Henry Rajsky, M.D., F.A.C.P. and Bernard Newman, B.S., Ch.E., M.S.</i>	783
Idiopathic Diseases of the Alimentary Tract..... <i>Arthur F. Coca, M.D.</i>	786
Chapter Activities .....	791
News Notes .....	791
Abstracts .....	793
Books Reviews .....	797

Owned and published monthly by the National Gastroenterological Association, Inc.  
 Editorial Office: 146 Central Park West, New York 23, N. Y. Business Office: 1819  
 Broadway, New York 23, N. Y. Copyright, 1949, by the National Gastroenterological  
 Association, Inc. Subscription rate, U. S., Pan-American Union: One year \$5.00, two years  
 \$9.00 (foreign \$7.00, \$13.00) Single copy: \$.50. Reentered as second class matter, Feb-  
 ruary 24, 1947, at the Post Office at New York, N. Y., under the act of March 3, 1879.

### Index to Advertisers

Bischoff, Ernst, Co., Inc.	803	Schenley Laboratories, Inc.	801
Bristol Myers Co.	754	Schering Corporation	807
Brooklyn Scientific Products, Co.	750	Searle, G. D., & Co.	743
Burton Parsons & Co.	800	Squibb, E. R., & Sons	749
Carel Laboratories	806	Standard Pharmaceutical Co., Inc.	792
Ciba Pharmaceutical Products, Inc.	2nd Cover, 799	U. S. Treasury	802
Flint, Eaton & Co.	804	U. S. Vitamin Corp.	751, 752
Hoffmann-La Roche, Inc.	744	Viobin Laboratories	805
National Drug Co., The	808	Warner, William R.	3rd Cover
Reynolds, R. J. Tobacco Co.	747	Whittier Laboratories	755
Robins, A. H., Co., Inc.	753	Winthrop-Stearns, Inc.	756
Sandoz Chemical Works, Inc.	800	Wyeth, Inc.	4th Cover

# *The Review of Gastroenterology*

OFFICIAL PUBLICATION

of the

NATIONAL GASTROENTEROLOGICAL ASSOCIATION

1819 Broadway, New York 23, N. Y.

Editorial Office, 146 Central Park West, New York 23, N. Y.

SAMUEL WEISS, *Editor*

## EDITORIAL BOARD

ANTHONY BASSLER

HARRY M. EBERHARD

WILLIAM W. LERMANN

## EDITORIAL COUNCIL

F. W. BANCROFT  
W. A. BASTEDO  
RICHARD BAUER  
BENJAMIN M. BERNSTEIN  
THEODORE BLUM  
DONOVAN C. BROWNE  
JOSE OVIEDO BUSTOS  
JOHN CARROLL  
LOUIS H. CLERF  
F. J. CONLAN  
FRANK A. CUMMINGS  
FELIX CUNHA  
RUDOLF R. EHLMANN  
MAX EINHORN  
HYMAN I. GOLDSTEIN

CHEVALIER L. JACKSON  
WM. C. JACOBSON  
I. R. JANKELSON  
SIGURD W. JOHNSON  
ELIHC KATZ  
RICHARD KOVACS  
FRANZ J. LUST  
G. RANDOLPH MANNING  
CHARLES W. MCCLURE  
GEORGE G. ORNSTEIN  
GEORGE T. PACK  
GEORGE E. PEABLER  
A. SUMNER PRICE  
HENRY A. RAFSKY  
MARTIN E. REHFUSS  
DAVID J. SANDWEISS

JOSEPH SCHROFF  
MARKS S. SHAINÉ  
I. SNAPPER  
HORACE W. SOPER  
WILLIAM H. STEWART  
J. E. THOMAS  
MAX THOREK  
C. J. TIDMARSH  
GABRIEL TUCKER  
CARLOS BONORINO UDAONDO  
ROY UPHAM  
R. H. VOSS  
MICHAEL WEINGARTEN  
LESTER R. WHITAKER  
FRANK C. YEOMANS

## ABSTRACT STAFF

MARK S. SHAINÉ, *Chairman*

LESTER L. BOWER  
A. J. BRENNER  
JOHN E. COX  
LEROY B. DUGGAN  
WILLIAM E. FITCH  
RICHARD I. KILSTEIN

ARTHUR A. KIRCHNER  
WILLIAM LIEBERMAN  
LJONEL MARKS  
LOUIS K. MORGANSTEIN  
WILLIAM L. PALAZZO

JACOB A. RIESE  
H. M. ROBINSON  
A. X. ROSSIGN  
A. SLANGER  
REGINALD B. WEILER

Business Office, 1819 Broadway, New York 23, N. Y.

DANIEL WEISS, *Managing Editor*

STEVEN K. HERLITZ, *Advertising Manager*

30-DAY TEST REVEALED

*"Not one single case of throat  
irritation due to smoking Camels!"*

Yes, that's what throat specialists reported after making weekly examinations of the throats of hundreds of men and women from coast to coast who smoked Camels, and only Camels, for 30 consecutive days.



According to a Nationwide survey:

*More Doctors smoke Camels*  
than any other cigarette

When three leading independent research organizations asked 113,597 doctors what cigarette they smoked, the brand named most was Camel!

*Kindly mention the Review when writing to Advertisers*

## GENERAL INFORMATION

**Contributions:** Articles are accepted for publication on condition that they are contributed solely to *THE REVIEW OF GASTROENTEROLOGY*.

Manuscripts should be typewritten double-spaced and the original copy submitted. Footnotes and bibliographies should conform to the style recommended by the American Medical Association.

Illustrations and diagrams should carry suitable lettering and explanations. Four illustrations per article are allowed without cost to the author.

News items of interest will receive due consideration.

**Reviews:** *THE REVIEW OF GASTROENTEROLOGY* will review monographs and books dealing with gastroenterology or allied subjects. It may be impossible to review all material sent. However, an acknowledgement will be made in the Department of Reviews.

The editors and publishers are not responsible for individual opinions expressed by their contributors, much less those given under current literature.

**Reprints:** A price list and order blank for reprints will be sent to each contributor before the journal is issued.

Manuscripts, abstracts, books for review and news items are to be sent to the Editorial office, 146 Central Park West, New York 23, N. Y.

Communications regarding business matters, advertising, subscriptions and reprints should be sent to the Business office, 1819 Broadway, New York 23, N. Y.

**Subscription price:** U.S. and Pan-American Postal Union: one year, \$5.00, two years, \$9.00. Elsewhere, \$7.00, \$13.00. Single copy \$.50. Members of the National Gastroenterological Association receive the *REVIEW* as part of their membership.

**Change of Address:** Notify publishers promptly of change of address. Notices should be given both old and new addresses.

## *New Sulfa Combination...*

# TERFONYL

*for safe sulfonamide therapy*

### HIGH BLOOD LEVELS

All three components are absorbed and excreted independently. High blood levels can be maintained without kidney concretion and with minimal sensitivity reactions.

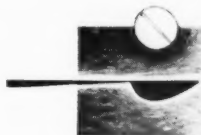
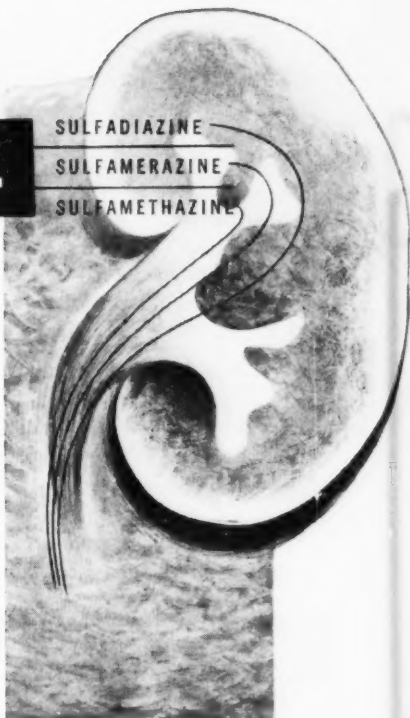
### WIDE ANTIBACTERIAL RANGE

All three components have a wide antibacterial range and are highly effective in the treatment of pneumonia and other common infections.

SULFADIAZINE

SULFAMERAZINE

SULFAMETHAZINE



0.5 Gm. tablets  
Bottles of 100 and 1000  
Suspension, 0.5 Gm. per cc.  
(pleasant raspberry flavor)  
Pint bottles

"TERFONYL" IS A TRADEMARK OF E. R. SQUIBB & SONS

**SQUIBB** MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

*Kindly mention the Review when writing to Advertisers*



# CHOLECYSTAGOGUE and CHOLERETIC

Proper nomenclature and definition of the action of pharmacologic agents on the biliary tract encourages clear thinking, discourages misrepresentation and aids in the choice of the proper therapeutic agent.

We are grateful for the clarifying and authoritative statement recently made by Ivy (1) regarding the correct application of the terms "cholecystagogue" and "choleretic". It is definitely established now that a *cholecystagogue* is an agent which causes or promotes the evacuation of the gall bladder. Fatty acids (oleic acid) are effective cholecystagogues. A *choleretic* possesses the property of increasing the output of bile. Bile salts and bile acids are most effective choleretics. They *do not* however promote gall bladder evacuation; in other words, *are not cholecystagogues*.

## EXICOL

by virtue of its oleic acid and bile salts content is both an effective *choleretic* and *cholecystagogue*. This has been amply proven (2, 3, 4).

Thousands of discriminating physicians in the past two decades have recognized this superiority of EXICOL and availed themselves of its therapeutic advantages in the management of disorders of the biliary tract.

**Indications:** Chronic cholecystitis, chronic (non-calculous) cholangitis, functional biliary insufficiency and preoperative and post-operative management of biliary tract conditions.

**Dosage:** Two capsules t. i. d., a. c. Marketed in boxes of 36 and 100 capsules.

1. Gastroenterology 3:54, 1944
2. Am. J. Roentgenol. 19:341, 1928

3. J. Lab. and Clin. Med. 18:1016, 1933
4. J. Lab. and Clin. Med. 19:567, 1934

• LITERATURE ON REQUEST •

**BROOKLYN SCIENTIFIC PRODUCTS CO. INC.**

2 East 23rd Street, New York 10, N. Y.



*Kindly mention the Review when writing to Advertisers*

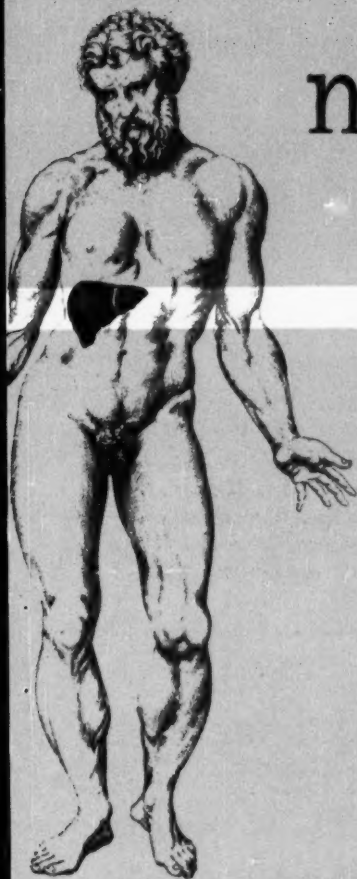
new

## hypercholesterolemia

**safe and effective reduction of blood cholesterol with lipotropic therapy**

"Clinical and experimental observations indicate that lipotropic factors [choline, methionine and inositol] ... prevent or mitigate the deposition of cholesterol in the vascular walls of rabbits and chickens and seem to exert a decholesterolizing effect on atheromatous deposits in man, chickens and rabbits."<sup>4</sup>

These new findings suggest use of Methischol in the prevention and treatment of hypercholesterolemia and its consequent atherosclerosis ... especially in certain patients with cardiovascular conditions, diabetes, nephrosis, nephritis, hypothyroidism ... in whom elevated blood cholesterol and/or liver malfunction frequently occur.



# methischol<sup>®</sup>

capsules and syrup

*Suggested daily therapeutic dose of  
3 tablespoonsful or 9 capsules contains:*

Choline Dihydrogen Citrate (Choline ... 1 Gm.)*	2.5 Gm.
dl-Methionine	1.0 Gm.
Inositol	0.75 Gm.
Liver Fractions from	36.0 Gm. liver
*present in syrup as 1.15 Gm. choline chloride	

samples and literature on  
methischol, please:

Dr. ....

address .....

city ..... zone ..... state .....

© U. S. VITAMIN CORPORATION, NEW YORK, N. Y.





# lipotropic therapy in liver disorders

**cirrhosis**  
**fat infiltration**  
**functional impairment • toxic hepatitis**  
**infectious hepatitis**

METHISCHOL supplies three of the "most important"<sup>1</sup> lipotropic agents (methionine, choline, inositol) in a liver extract base . . . to favor the transport of fat from the liver to fat depots of the body.

Even "cirrhosis of the liver is no longer a hopeless, incurable disease . . . Recent reports show that many patients with hepatic cirrhosis can improve or recover"<sup>2</sup> with specific lipotropic substances, liver extract, and nutritional management.<sup>3</sup>

# methischol

*lipotropic methionine,  
choline, inositol  
in a liver extract base.*

Postage  
Will Be Paid  
by  
Addressee

No  
Postage Stamp  
Necessary  
If Mailed in the  
United States

## BUSINESS REPLY CARD

First Class Permit No. 25016 (Sec. 510 P. L. & R.) New York, N. Y.

**U. S. VITAMIN CORPORATION**

**CASIMIR FUNK LABORATORIES, INC. (affiliate)**

250 East 43rd Street

New York 17, N. Y.

*Supplied in bottles of 100,  
250, 500 and 1000 capsules,  
and 16 oz. and  
one gallon syrup.*

*Write for Samples and Literature*

- <sup>1</sup> Brown, G. O.: *Postgraduate Med.* 4:203, 1948.
- <sup>2</sup> White, B. V.: *Amer. Practitioner* 8:799, 1948.
- <sup>3</sup> Morrison, L. M.: *J. A. M. A.* 134:673, 1947.
- <sup>4</sup> Hueper, W. C.: *Med. Clinics of North America* May 1949.



announcing another Robins' achievement

## NEW TRIPLE-ENZYME DIGESTANT

with unique Peptomastic Action!

Gastrically soluble outer shell contains pepsin; enterically coated core contains pancreatin and bile salts.



By the development of an entirely new type of coated tablet, consisting of a gastrically soluble outer shell containing pepsin, and an enterically coated core containing pancreatin and bile salts—Robins (with their new product Entozyme) now makes it possible to release these three important digestants in fully active form to that part of the gastrointestinal tract where pH conditions for optimum activity prevail.

Clinical research<sup>1</sup> indicates that Entozyme's greatest field of usefulness is in chronic cholecystitis, post-cholecystectomy syndrome, subtotal gastrectomy, infectious hepatitis, pancreatitis and chronic dyspepsia—where its unique selective therapy restores more nearly physiological conditions in the gastrointestinal tract. It is also highly effective in nausea, anorexia, belching, flatulence and pyrosis. In peptic ulcer patients, too, pancreatin-pepsin therapy has produced excellent results.<sup>2</sup>

**FORMULA:** Each specially constructed tablet contains Pancreatin, U.S.P., 300 mg.; Pepsin, N.F., 250 mg.; Bile Salts, 150 mg.

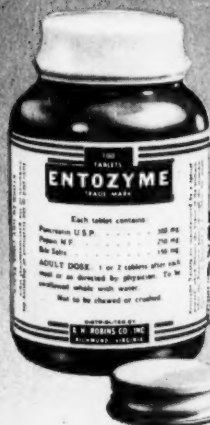
**DOSAGE:** 1 or 2 tablets after each meal, or as directed by physician, without crushing or chewing

**SUPPLIED:** Bottles of 25 and 100.

**REFERENCES:** 1. McGavack, T. H. and Klets, S. D., Bull. Flower Fifth Ave. Hosp., 9:41, 1946.  
2. Weisberg, J., McGavack, T. H. and Boyd, Linn J., Am. J. Digest. Dis., 18:332, 1949.

<sup>1</sup>A coined word to describe the unique mechanical action of Entozyme Tablet—whereby pepsin is released only in the stomach, and pancreatin and bile salts only in the small intestine.

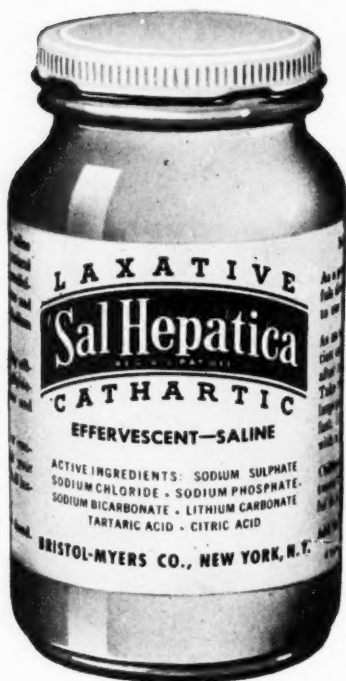
**A. H. ROBINS COMPANY, INC. • RICHMOND 20, VIRGINIA**  
Ethical Pharmaceuticals of Merit since 1878



# ENTOZYME



Gentle  
Pleasant  
Prompt



A pleasant, effervescent saline laxative which acts by osmosis to produce soft fluid bulk . . . stimulates peristalsis . . . promotes prompt but gentle evacuation.

**Aperient \***



**Laxative \***



**Cathartic \***



Product of BRISTOL-MYERS • 19 West 50th Street, New York 20, N. Y.

\* Average dose

*Kindly mention the Review when writing to Advertisers*

not just resin  
not just mucin

but **RESMICON®**

mucoprotective acid-adsorbent  
for peptic ulcer therapy

- relieves pain and promotes healing in peptic ulcer
- relieves distress in hyperacidity

**RESMICON'S** anion-exchange polyamine resin combats acidity by a new—non-chemical—principle. It physically adsorbs acid radicals. In the stomach resin rapidly inactivates HCl and inhibits pepsin with complete freedom from side effects.

**RESMICON'S** natural gastric mucin protects the gastric mucosa. Clinicians have amply demonstrated its value in peptic ulcer therapy. But mucin alone is limited by its weakness as an antacid and by the large and frequent dosage required.

**RESMICON**, uniting resin and mucin, is an outstanding agent for the effective treatment of peptic ulcer and hyperacidity.

*Whittier*  
**LABORATORIES**

Division Nutrition Research Laboratories  
Chicago 30, Illinois



**60 Gm.  
Amino Acids  
per liter**

(full daily adult  
requirement)

**Parenamine<sup>®</sup>  
6%**

Well tolerated amino  
acids for replacement  
of protein lost through  
burns, injury, surgery,  
gastro-intestinal disease  
and inanition.

*Winthrop-Stearns* INC.  
NEW YORK 13, N. Y. WINDSOR, ONT.

PARENAMINE, trademark reg. U. S. & Canada

*Kindly mention the Review when writing to Advertisers*

# *The Review of Gastroenterology*

(INCORPORATING THE AMERICAN JOURNAL OF GASTROENTEROLOGY)

*A monthly journal of Gastroenterology, Proctology and Allied Subjects*

VOLUME 16

OCTOBER, 1949

NUMBER 10

## AN UNUSUAL COMPLICATION FOLLOWING RADICAL PANCREATICODUODENECTOMY\*

ALEXANDER J. A. CAMPBELL, M.D., F.A.C.S.†

and  
STANLEY MIKAL, M.D.‡  
Boston, Mass.

The purpose of this paper is to present an unusual complication following radical pancreaticoduodenectomy.

*Case Report:*—B. C. H. No., Patient D. R. age 60, a white Italian laborer, was admitted to the Boston City Hospital on 4-11-48 with intermittent mid-epigastric pains and jaundice.

*Past History:*—On May 10, 1932, an appendectomy and cholecystectomy, without biliary duct drainage, were performed at the BCH for acute cholecystitis. A 3 cm. stone was found in the fundus of the gallbladder. Postoperatively, a small biliary fistula developed which healed within 4 weeks. Up until 1947, the patient remained asymptomatic and in apparent good health.

May 14, 1947, the patient was readmitted to the BCH with a 3 months' history of RUQ pain which radiated to the back and was associated with jaundice, dark urine, and light-colored stools. The epigastrium was found to be slightly tender and rigid, and the skin icteric. Icterus Index was 40, urinary bile 4 plus, WBC 17,359, urinary diastase negative, FBS 176, cephalin flocculation 1 plus, alkaline phosphatase 2.1 units, prothrombin time 50 per cent, bleeding time 3 minutes, and clotting time 7.5 minutes. Spot films of the G.B. were negative for opaque calculi.

May 24, 1947, the patient was explored. The head of the pancreas was found to be enlarged and firm. The common duct was enlarged; it was explored but no calculus was found. A biopsy from the head of the pancreas was taken and report of the frozen section of the pancreatic tissue revealed carcinoma. A one-stage radical pancreaticoduodenectomy operation was performed according to the method of Cole & Reynolds (1945). The duodenum, head and uncinate process of the pancreas, distal end of the common bile duct, and pyloroantral portion of the stomach were resected en bloc. An antero-colic end-to-side choledochojejun-

\*From the Department of Surgery, Tufts College Medical School, and the First Surgical Service, Boston City Hospital.

†Assistant Professor of Surgery, Tufts College Medical School. Assistant Visiting Surgeon, Boston City Hospital.

‡‡Senior Assistant Resident in Surgery, Boston City Hospital.

ostomy was performed over a small rubber catheter which was held in place with one c.c.g. stitch, and omentum was sutured around the choledochojejunostomy to reinforce the suture line. An antecolic oralis partialis gastrojejunostomy was created and the pancreatic stump inverted with silk sutures without reimplantation into the bowel. A drain was placed down to the pancreatic stump and the abdomen closed. Subsequent microscopic pathological examination of the resected pancreas was reported chronic and acute pancreatitis with no demonstrable tumor present. Postoperatively, a pancreatic fistula developed which drained for about 2 months and the patient improved such that his jaundice subsided, urine cleared and appetite increased. The patient was discharged from the hospital on June 21, 1947 as improved.

*Present Illness:*—On May 11, 1948 the patient was readmitted to the BCH with intermittent midepigastric pains and intermittent jaundice of three months' duration. The epigastric pains were variable in intensity and radiated to the right

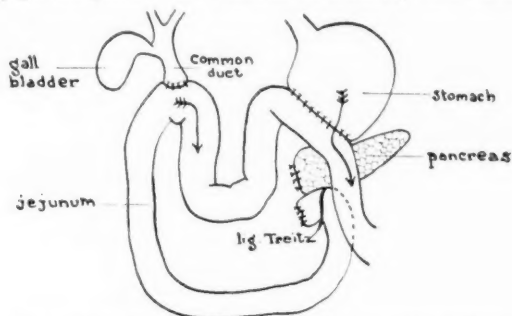


Fig. 1—Operation performed: A Cole and Reynolds pancreaticoduodenectomy (1945).

flank and interscapular region. They were associated with nausea, anorexia and retching. The jaundice was intermittent and accompanied by dark urine and clay-colored stools.

*Physical Examination:*—There was tenderness but no muscle spasm. In the RUQ there were 2 healed longitudinal scars. The skin, mucous membranes and sclerae were icteric. Bilateral indirect inguinal herniae were present. B.P. was 116/74, temp. 103, pulse 100 and respirations 22.

*Laboratory Examination:*—H.B. 13g., WBC 6,600, Hinton negative, 3 plus bile in urine, NPN 25, FBS 80, Prothrombin time 42 per cent, I.I. 52.8, cephalin flocculation 2 plus, flat plate of abdomen negative.

*Preoperative Diagnosis:*

1. Ascending cholangitis via choledochojejunostomy.
2. Stricture at anastomotic site of choledochojejunostomy.
3. Stricture of CBD due to adhesions.
4. Recurrent carcinoma of pancreas with invasion of bile ducts or stomach.
5. Pancreatic cyst with compression of biliary duct.



**Operative Findings:**—May 22, 1948 the patient was explored through a right upper rectus incision. The gastrojejunostomy was found to be patent and functioning. The CBD was bound down to the anticollic jejunal loop by dense adhesions but was not strictured or kinked. Multiple small stones were palpated in the CBD. No patency of the choledochojejunostomy could be determined by palpation so a small incision was made into the afferent loop of the jejunum 2" away from the site of the choledochojejunostomy. The choledochojejunostomy was located from within the jejunal lumen and found to be obstructed by a hard mass. No dilators could be passed up into the common bile duct as a result of this obstruction. There was no stenosis of the stoma of the choledochojejunostomy. The common bile duct proximal to the choledochojejunostomy was located in dense adhesions by the needle method of aspiration of Lahey, and freed from adhesions. The cuff of omentum reinforcing the anastomotic site of the choledochojejunostomy was dissected away from the distal end of the common bile duct and the anastomosis exposed. A small vertical incision was made into the anasto-

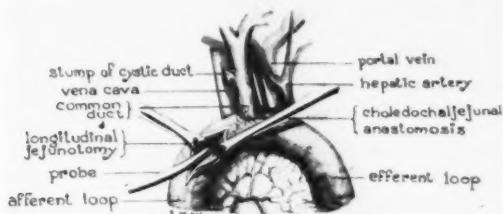


Fig. 2—Jejunotomy. Incision of jejunum one inch from choledochojejunostomy. Edges of the jejunotomy retracted by Allis clamps. Insertion of a probe through the jejunotomy, and determination of the patency of the choledochojejunostomy.

motie site and an impacted gallstone removed. Several additional small stones were removed from the lumen of the common bile duct at a higher level. The common bile duct was irrigated with saline until the fluid returns were clear and sounds were passed into the common bile duct up to the porta hepatis. A "T" tube was inserted into the common bile duct via the choledochotomy. Its lower limb was passed into the afferent loop of the jejunum, while its upper limb ascended the common bile duct. The common bile duct was closed in a transverse manner around the "T" tube with silk. The jejunotomy was closed longitudinally with catgut and silk. The long limb of the "T" tube was brought through the abdominal incision and the abdominal wall was closed with #28 stainless steel wire. Postoperatively the patient had an uneventful recovery and was discharged from the hospital as improved.

**Discussion:**—Jaundice following a radical pancreatoduodenectomy is a common complicating occurrence and its cause often not determined. Usually following radical pancreatectomies, jaundice means recurrence of cancer with hepatic metastasis or obstruction of bile ducts by carcinoma. Though this may be the usual

course of events, an occasional case may have jaundice on another basis which may be relieved by operation.

Ascending cholangitis is another fairly common cause of jaundice following radical pancreaticoduodenectomies. It customarily follows cholecystogastrostomies constructed in the first or second stage Whipple operation of 1935, or the Pickrell-Blalock operation of 1944. It is present, but to a lesser degree, in cholecystoduodenostomies and cholecystojejunostomies. However, it is of less common occurrence in choledochojejunostomies and occurs least of all in choledochojejunostomies utilizing the end Roux anastomosis as advocated by Whipple in 1938, Moreland and Freeman in 1941, Watson in 1944, and Cole and Reynolds in 1945. Due to the ascending cholangitis, multiple hepatic abscesses result, and cholemia, jaundice and death ensue. Ascending cholangitis can occur immediately postoperatively or several years after operation.

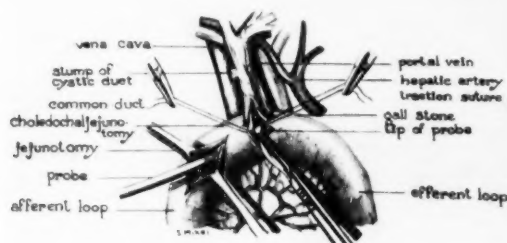


Fig. 3—Choledochojejunostomy. Vertical incision of choledochojejunal anastomosis. Retraction of the choledochojejunal edges by means of traction sutures. Probe inserted into jejunotomy and visualized in choledochojejunostomy meeting obstruction from a stone lodged at the site of the anastomosis.

Stricture as a cause of jaundice in pancreaticoduodenectomized patients may develop at the choledochojejunostomy or cholecystogastrostomy, or anywhere along the common bile duct. Inflammation around the site of the cholecystojejunostomy or choledochojejunostomy causes stenosis and eventual obstruction. Contractures of adhesions around the common bile duct or injuries to the common bile duct during operation may also result in strictures and obstruction of that tube.

Pancreatic cyst may result in compression of the common bile duct or the choledoch- or cholecystojejunostomy and produce jaundice. After inversion of the pancreatic stump, the pancreatic secretions accumulate intraluminally and intracinarly and result in cystic formation and enlargement of the pancreas. When the stump blows out, a fistula results. The fistula usually heals in 2-6 months. During that time the pancreas undergoes fibrosis and atrophy with subsidence of its cystic



nature. This complication can be avoided by constructing pancreaticoduodenojejunostomies utilizing the methods of Poth, Cattell, Varco, or Dragstedt. Though pancreaticojejunostomies are not standard procedures, they are being employed more frequently. The whole problem of pancreatic anastomosis or pancreatic stump inversion is still debatable and either method is compatible with life; however, pancreatic anastomosis is the more physiological procedure of the two.

Cholelithiasis following radical pancreaticoduodenectomies is another cause of jaundice. Hence, in some cases of jaundice following radical pancreaticoduodenectomy, exploration is justifiable. Though inoperable metastatic carcinoma will usually be found, strictures or common duct stones may be solely responsible for the jaundice, and lysis of adhesions or removal of the stones will result in relief of jaundice and further assurance that there was no recurrence.

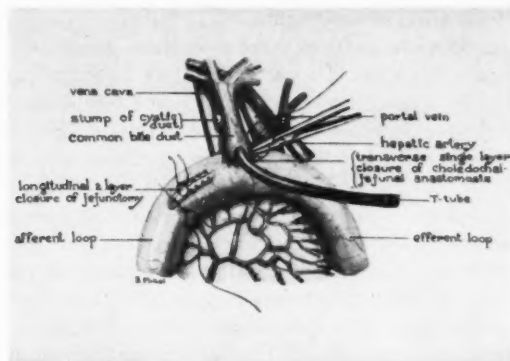


Fig. 4—T-tube Drainage of Common Bile Duct. Insertion of a "T" tube into the common bile duct and afferent limb of bowel. Transverse suture of the choledochojejunal edges around the "T" tube and longitudinal suture of the jejunotomy.

Other problems of discussion are the questions of biopsy of the pancreas in suspected carcinoma of that organ, and the rationale of pancreaticoduodenectomy in chronic pancreatitis. Biopsy of the pancreas with frozen section is at times unreliable as proved by this case report. Thus, as Cattell has maintained, the only criteria for operability in suspected carcinoma of the pancreas is clinical judgment. Thus, if a surgeon believes clinically that a patient has cancer of the pancreas, pancreaticoduodenectomy is justifiable without biopsy. However, the biopsy, if positive by frozen section, will give further reassurance that the operation is indicated. Not to be dismissed, is the fact that frozen section of pancreatic biopsies will, on occasion, prove erroneous. Reports will come back as carcinoma when acute and chronic pancreatitis is later substantiated by microscopic fixed and stained specimens. Also, a report may be made from a specimen of pancreatic tissue taken from the periphery of the pancreas which shows only acute and chronic pancreatitis, while deeper in the substance of the gland is hidden a carcinoma. Thus clinical judgement is the only criteria for operability.

There have been several methods proposed for operation in recurrent attacks of chronic pancreatitis. Archibald suggested sphincterotomy for pancreatitis (1913) and performed the first transduodenal Oddi sphincterotomy in 1918. Along similar lines, Doubilet and Mulholland performed endocholedochal Oddi sphincterotomies (1948); they reported a series of five cases with good results. Unilateral left-sided splanchnicectomies were advocated by Mallett-Guy, Jeanjean, and Servetax (1945) for chronic pancreatitis; in their series of 11 cases, 9 obtained relief. Reinhoff (1947) performed bilateral splanchnicectomies and vagectomies for pancreatic pain with excellent results. Coincidentally, DeTakats and Walter (1947) reported on unilateral splanchnicectomy and lower dorsal sympathectomy for pain in calculous pancreatitis and in operable carcinoma of the pancreas; relief was promptly obtained in the 2 cases they reported. Though the follow-up studies in the cases these various authors presented are inadequate, they definitely indicate a trend in the surgical treatment of pancreatic disease, heretofore, treated medically. Because clinicians are becoming more conscious of chronic pancreatic disease, more accurate diagnoses of acute and chronic pancreatic disease are being made and confirmed by special laboratory tests, as the serum amylase and urinary diastase. As a result, the increased number of patients diagnosed with acute or chronic pancreatitis are often left to suffer from recurrent attacks of pancreatitis because of inadequate medical treatment. Thus, it is not unreasonable to subject patients suffering from recurrent attacks of pancreatitis, or pain due to calculous pancreatitis, to operation such as partial pancreatectomy, total pancreatectomy, or pancreaticoduodenectomy to eradicate the disease. Operations such as transduodenal or endocholedochal sphincterotomies may be advocated if a faulty anatomical arrangement of the biliary and pancreatic ducts in the wall of the duodenum can be demonstrated, showing reflex of bile into the pancreatic ducts of Wirsung or Santorini.

For intrinsic disease of the pancreas, sphincterotomies would be inadequate, since 40 per cent of acute and chronic pancreatitis is reported to be due to bacterial infection via lymphatic channels and is not a result of reflex biliary regurgitation into the pancreatic ducts (60 per cent). Splanchnicectomy, unilateral or bilateral, associated with or without vagectomies or lower dorsal sympathectomies, represents an indirect method of attack on pancreatic disease. Actually it is a method of treating a symptom and not a disease. Regardless of the cause of pancreatitis, the disease itself is chronic and the pain severe and incapacitating, and because medical treatment is so unsatisfactory, surgery is justifiable.

#### SUMMARY

1. A case of jaundice with common bile duct obstruction due to stones following a radical pancreaticoduodenectomy is presented.
2. Exploratory laparotomies are indicated in pancreaticoduodenectomized patients manifesting recurrent jaundice, because jaundice may be due to such operable causes as cholangitis, strictures, stones, pancreatic cysts, and not inoperable carcinoma.

3. Biopsy of the pancreas with frozen section, on occasion, is unreliable. The only criteria for operation is clinical judgment.
4. Some form of operative treatment for chronic pancreatitis is advocated.
5. The treatment for choledocholithiasis following radical pancreaticoduodenectomy is jejunotomy with exploration of the patency of the choledochojejunostomy followed by choledochotomy with "T" tube drainage of the common bile duct.

## REFERENCES

1. Archibald, E.: *Canad. J. M. Surg.* **33**:263, 1913.
2. Idem: *Surg. Gynec. & Obst.* **28**:529, 1919.
3. Cattell, R. B.: *S. Clin. North America*, **23**:753, 1943.
4. Cole, W. H. and Reynolds, J. T.: *Surg.* **18**:133, 1945.
5. DeTakats, G. and Walter, L. E.: *Surg. Gynec. & Obst.* **85**:742, 1947.
6. Doubilet, H. and Mulholland, J. H.: *Surg. Gynec. & Obst.* **86**:295, 1948.
7. Dragstedt, L.: *Ann. Surg.* **118**:556, 1943.
8. Lahey, F. H.: *Ann. Surg.* **105**:765, 1937.
9. Mallet-Guy, P., Jeanjean, R. and Servetax, P.: *Lyon Chir.* **40**:293, 1945.
10. Moreland, R. B. and Freeman, B. S.: *Surg.* **9**:712, 1941.
11. Pickrell, K. L. and Blalock, A.: *Surg.* **15**:923, 1944.
12. Poth, E. J.: *Surg.* **15**:693, 1944.
13. Reinhoff, W. R. and Baker, B. M.: *J.A.M.A.* **134**:20, 1947.
14. Varco, R. L.: *Surg.* **18**:569, 1945.
15. Watson, K.: *Brit. J. Surg.* **31**:1944, 1944.
16. Whipple, A. O., Parsons, W. B. and Mullins, C. R.: *Ann. Surg.* **102**:763, 1935.
17. Whipple, A. O.: *Am. J. Surg.* **40**:260, 1938.

## BIOTOXIC INTESTINAL CONDITIONS OF THE PUTREFACTIVE TYPE

ANTHONY BASSLER, M.D., F.A.C.P., I.L.D.

New York, N. Y.

The acid fermentative type of this condition was previously described<sup>1</sup>. Attention was directed to the common presence of high degrees of putrefaction associated with the fermentative condition in which it was mentioned that the protein split down was prepared by the anaerobes and finished by organisms of *B. coli* classifications. The tryptic breakdown of proteins can prepare the protein molecules without bacterial activity but this is never toxic in character. Distinctions between the putrefactive and acid fermentative, while possible at times, is often a combined affair with varying degrees of one or the other process. Because of the laboratory significance this combined type will be mentioned in a subsequent article.

It has already been stated that organisms of the *B. coli* type, which are capable of invading the small intestine, are abundant indol producers which product is no doubt mostly due to bacterial cleavages, and which may largely replace or largely enhance that due to tryptic digestion. While in the combined type of case the anaerobes may be elevated and significant, in the pronounced putrefactive instance they are low. Using the one-third count as an index, one may see the Gram positive organisms as high as half of the bacterial count in the combined form and practically almost be absent in the indolic. There are also instances in the more straight putrefactive form in which the *B. protens*, *B. alcaligenes*, *clostr. putrificus*, several types of streptococci and staphylococcus albus also abound.

Any obstructive condition in the small or large intestine would definitely enhance the action of the putrefactive bacteria. The same is true clinically in low gastric and pancreatic secretions, habitual constipation and lack of outdoor exercise. The strictly putrefactive forms, however, have departures from the strictly acid-fermentation type, although this is confused in the combined form.

### PATIENT

In a general way the clinical distinctions between the fermentative and the putrefactive conditions are quite evident. The first usually represents a well nourished person in which the clinical state described in the former article is different from those in the later groupings. The past history of the patient is usually that of a considerable array of illnesses. Without attempting to detail these, the suggestion is that the person is one who is below par in vital health. More or less continuously over a period of years infective conditions are common especially in the upper respiratory tract, skin eruptions of continued types are often present, and unless considerable outdoor life is engaged in, the complaints continue or multiply. Fatigue is definite, even in young adults. Poor appetite exists more or less, and constipation is the rule with abuse of the use of laxatives. Post-meal weight, pressure and distress in the epigastric regions due to hyposthenic states may be complained of, and tendencies to depressed and other types of emotional

states are common. Neuralgic, neuritic and neurasthenic symptoms may be present. Many of these persons are considerably underweight and have difficulty gaining weight regardless of diets and additions. They may, after much effort and time, gain a few pounds and lose them in a day or two. An occasional patient may be normal in weight but obesity is rare. In many instances varying degrees of simple anemia exists; visceroptosis, dilated right colons and low toned abdomens, especially in women, are observed. Functional eye symptoms, vasomotor phenomena, nervous chills, halitosis, simple colitis, arthritis, cystitis, etc. are complained of or are present. Hypotension and lowered adrenal, and thyroid states are common. Neurotic symptoms affecting various parts of the body may be complained of. Usually gastric test meals show a lowering or absence of acidity, an atonic stomach with slight gastric stasis (noted by x-ray) and a moderate lowering of the enzyme content in the external secretion of the pancreas. So-called atrophic gastritis is mostly due to this gut condition.

While the bacterial examination of stools is a task that has no ending, the first plan is to determine the common varieties of flora and to get a rough idea of the individual varieties. The stool should be examined as soon after passage as possible, especially if cultures or phagings are to be engaged in. Bacteria in stools becomes nonviable soon after the stool is passed. The first examination is the observation of the Gram differential stained stool, a count (or general observation) of the specimen, to note the general predominance of the bacilli (not the cocci) that have taken the counter stain. These loosely represent to a great extent the coliform groups of organisms, the significant factors in the production of putrefaction. Usually more or less anaerobes and saphrophytic organisms that take the positive stain are present. Should these be high (definitely over one-third including cocci) they would be significant in preparing the way for protein breakdown and really become significant as one of the causes of putrefaction even though the stool be alkaline and the urine is high in ethereal sulphates. This combined type will be described in a later article. As a rule, in the putrefactive type, phagings to prove the persistence of the inimical *B. coli* are essential. Generally, in intestinal organisms, the distinctly pathogenic types and strains are resistant to phagings especially when in association with other intestinal organisms. All of the forms of *B. coli* are amenable, but those that persist or are cultivatable after 72 or 96 hours are significant in an infective toxic sense. Often in the anaerobic tubes, by comparison with the aerobic tubes, information of diagnostic significance between the importance of anaerobes versus aerobes can be secured. This is not always so. Anaerobic and aerobic measures should be run in conjunction with subculturations to note ready growths of streptococci, staphylococci, alcaligenes, anthrax, etc., since these are important in some instances. At times, extensive subculturation procedure may be required for identification. It is well, however, to note the presence of as many forms of pathogenic organisms as possible, some of which may be used as vaccines, singly or combined. Unless the anaerobes are higher than normal, the greater significance for diagnosis would be on the Gram negative organisms.

The presence of large amounts of indican in the urine is excellent evidence of intestinal putrefaction. The manufactured products in stool depend also upon the diet and the intestinal emptying time and in this toxic state the examination of urine is valuable in diagnosis. Indol, skatol and paracresol are largely eliminated as ethereal sulphuric acid products in urine and these are definitely increased above normal. It is common to observe a high content of these substances on the first office examination of the urine, only to find that in the specimens collected on test diets it is absent or much lowered. Therefore, a casual urine specimen is of no value for diagnosis and the standard test diet is important. If the ethereal sulphates are high, the diagnosis of a toxic state is suggested. Indican is derived from indol, a product of intestinal putrefaction of albuminous substances. While there is still some question of its significance in large amounts there is no doubt of its importance, and it is not produced by constipation alone because its presence may be high and the bowels be loose or normal. Phenol is allied to it, both generally occurring together. The amounts of ethereal sulphates is increased generally in *achylia gastrica*, various acute and chronic intestinal affections, peritonitis, cholera, duodenal ulcer, "toxic headaches", etc. Slight (trace) amounts of albumin and urobilinogen are common, and high urate urines are often seen. Bile and glucose may be present at times in trivial amounts. The specific gravity of these urines is low or normal, pale in color, and the pH usually is higher than 6.0.

#### TREATMENT

The most important item of treatment is biologic but this is not simple and often requires study to determine the most desirable means to employ. As has been mentioned before in the acid fermentative type, there are different toxicities connected with different strains of *B. coli* and different pathogenicities from the same strains in different people. The factors of antagonisms between the different strains is important in individual cases in cardinalizing the therapy. For these reasons the study of phagings of the stool is necessary to note rapid disappearing and persistencies of the strain or strains of coliform organisms present. Usually there are more than one strain but those that phage quickly are generally the least important in toxic production sense but the more important in rectal instillation treatment. The method of studying phagings has been mentioned in the former article. It was brought out that to get set on the methods devised and employed by the author in several thousand instances, the persistencies of any organism other than *B. coli* which belongs to organisms of the pathogenic type and persists through the phagings, may be judged as important in the individual case. These may be used in association with the high toxic *B. coli* as subcutaneous vaccines. In the mixed bacteriology of human stools some forms of *B. coli* disappear in the phagings by the 96th hour. Both those that disappear early and those that are present and cultivatable from 72 to 96 hours onward are important for treatment. Attention should be paid to use the strain or strains that phage quickly (24 to 48 hours) for rectal instillation use. These represent largely the none or low pathogenic strains, and, while they are overcome by the more toxic types, they never-

theless comprised in the group of the more largely antagonistic types, which, because of their small number, are overcome by those of the less persistent toxic types. If the early take-off are grown in large numbers separately and discharged into the rectum at steady intervals they tend to overcome the more pathogenic forms and eventually become the superior residents in the colon, the more toxic form often disappearing entirely. If the original laboratory work is properly done so that this preliminary information is secured, one can, in the majority of instances, depend upon this antagonism by this replacement method. Should the study upon phaging not be satisfactory in securing desirable strains, one may try other strains of *B. coli* secured from stock cultures that are not too remotely removed in their culturizations so as to lose their specificities for growth in the intestines. It is desirable here to also use a fresh strain from some normal stools and to test these against the patient's stool. In this, one often has to test several strains from different sources and the strain selected be used for several weeks at the start of treatment. Because of the facultative nature and loss of specificities through subculturations of intestinal organisms, the securing of strains from outside stool is more desirable rather than to use stock strains. After a month or so and further study of phagings to note that a satisfactory strain is resident in the colon, cultures can then be made from the patient's stools and the treatments continued with these for four or five months time in bi-weekly instillations. Usually 15 cc. of viable culture made up to 120 cc. of dextrose solution is employed for the instillations, the patient remaining prone for fifteen minutes after the injection. To do this work requires considerable laboratory procedures and study, but generally the results are well worth while. An item of help is the making of white blood cell counts during the sixth to eighth hour after instillation for the first few instillations to note if a distinct leucopenia is present. For reasons that I do not know, the cases that show leucopenia most often show the most successful results from this treatment. Increase of leucocytes never seems to occur. This drop in white blood cells persists throughout the first few weeks of treatment and does not recur after that. Even those that do not show this do well on this treatment. As the treatments progress one must watch for anaphylactic reactions which usually take on the form of extreme fatigability or lapses of memory states. Such reactions do not take place until the instillations have been kept up for several weeks. They may occur rather promptly (in a month or so) but usually not until the third or fourth month. When occurring, the instillations should be stopped. They are usually controlled by a few doses of acetylsalicylic acid.

The rectal instillation of organisms of the *B. coli* type was advanced by the author<sup>2</sup>. Some years afterwards the late J. Reese Satterlie suggested the employment of *B. coli* vaccine in subcutaneous injections without phaging or cultural studies being made in advance. Even in this "shot in the dark" method there is some merit if the vaccine should happen to consist of the pathogenic types of *B. coli* present in the bowel, but this should be tested out in advance. To use a non-toxic strain means that a result could only be produced by a possible kicking up of the immunity production forces in a general way by the introduction of a pro-



tein substance—a nonspecific protein injection therapy—and other proteins, non-bacterial in type, would answer just as well and be less troublesome. On the other hand, the specific proteins and the toxic bodies produced by and carried in the exogenous organisms like the *Escherichia* classifications, to which the *B. coli* belong, should be the basis of vaccine therapy. In this instance the *B. coli* used as vaccines should be that of the persistent strains and recovered from the patient's stool. After noting its toxicity by persistence in phage studies, a vaccine or ectoantigen is easily made and should be of the concentrated vaccine form because any of the intestinal organisms used in this way usually have a low virulence and must be used in considerable doses over lengths of time to accomplish any results in immunity production. Such treatments bring their results about by immunity production bodies being excreted in the juices into the digestive tract. The advantage of this subcutaneous method permits the combinations of the *B. coli* with other organisms that may be assumed to be of importance. In the pronounced cases both rectal instillation and vaccine methods may be employed, although this is not constantly required.

#### DIET

The second item of importance is the character of foods in the intestinal tract for the bacteria to work on. In putrefaction cases the proteins have to be definitely controlled, and those of the high protein bearing foods like meat, fish, poultry, eggs, cheese and the legumens should receive severe reductions. The equivalent of 90 grams of protein as such in foods is required by the average adult to maintain nitrogen balance. Such an amount can generally be obtained from a vegetarian and fruit diet, to which perhaps a little of the more highly protein foods, like eggs and cheese, could be added. Another important item here is that the protein foods should be soft, the vegetables and starches well hydrolized by cooking and all the foods taken in comminuted forms for easy and more complete digestion in the upper levels of the intestines and to leave the smallest amount of residue for accumulation in the colon. Milk as such is generally not allowed, firstly because it is constipating to many people, or the producer of diarrhea when an allergy to it exists.

An important matter here is that the constipation must be controlled. For this the steady use of any types of laxatives are not to be desired. They accomplish purgations by bringing on congestion of the bowel causing a greater degree of absorption of toxins from the bowel and as a result a higher degree of body effects. Commonly after the use of the simplest kinds of laxative drugs the degrees of toxic absorption is doubled and tripled. Normal bowel movements must be brought on by foods, the drinking of more water (five tumblersful a day in addition to the other fluids) and the engaging in systematic outdoor exercise. In addition to bowel stimulation, the extra fluids help in body elimination of the sulphuric acid products. High vegetable diets tend to be laxative because of their cellulose and hemicellulose character. Salads and fresh fruit (in which the generous use of olive and other types of organic oils and fats are desirable), should be taken in abundance generally reducing the alkalinity in the bowel. The employment of laxa-



tive additions (like psyllium, agar, bran, etc.) are often required. An occasional low enema or glycerine suppository may be necessary. A type of low protein diet is as follows:—

The plan to follow is to partake of only soft or fluid foods or cut those that are solid very fine. Eat oftener than three times a day if possible. Most all foods are allowed but the following comprise the diet mostly:

Soups		
Split pea	Vegetable soups	Bisques
Lentil soup	Bouillon with egg	Mock bisques
Creamed soups	Tomato bouillon with rice	Victoria soups
Eggs, two a day		
Soft boiled	Poached on toast	Omelette
	Steamed or baked	
Meat substitutes		
Scrambled eggs, spinach, potatoes	Oysters, any form	
Vegetable hash	American or cream cheese	
Nuts, macaroni, potatoes	Fried mushrooms on toast	
	Combination of four vegetables	
	Chili con carne (Mexican style), with boiled rice	
Vegetables		
Boiled potatoes	Boiled onions	Spinach
Riced potatoes	Creamed onions	Stewed corn and rice
Mashed potatoes	Beans and rice	Rice and grated carrots
Creamed potatoes	Buttered beets	Buttered cabbage
Baked potatoes	New England boiled dinner	Boiled cabbage
Spaghetti	Stewed corn	Spaghetti and tomatoes
Lentils	Green beans	Mashed turnips
Lima beans		Baked beans
Cereals		
Shredded wheat	Whole wheat	Corn meal mush,
Rice and raisins	Corn meal	honey
Roller oats	Natural rice	Fruit and cereal
Gluten breakfast foods		Cracker gruel
		Hominy
Fruits		
Raisins	Baked banana	Prunes
Fresh pineapple	Grapes	Compote
		Apple and preserved peaches
		Orange
		Baked apple
		Rhubarb
Salads		
Fruit	Mock chicken	Lettuce
Fruit and nut	Sliced onion	Celery
Vegetable combination	Potato	Ripe olives
		Tomato
		Romaine
		Watercress
Desserts		
Rice pudding	Chocolate cake	Chocolate pudding
Bread pudding	Banana cream cake	Custards
Raisin pudding	Fruit charlotte	Meringue
Fruit pudding	Honey	Fruit whips
Cereal pudding	Fruit short cake	Souffles
Pies, fruit, graham crust	Corn starch	Junkets
Gluten pudding	Tapioca cream	Gelatine
Jellies	Grape punch	Fruit cream
Beverages		
Cocoa	Malted milk	Lemonade
Milk, cold and hot	Coffee Hag	Yerba mate
Buttermilk	Orange juice	Plain cool water
Orangeade		Fruit juice and water

## DRUGS

This condition would be ideal for the use of so-called intestinal anti-septics but there are none of value. Salol, beta naphol, calomel and endless others have been tried and none of them change the flora or have any effect upon the toxemia. Sometimes the various sulfa drugs of the nonabsorbable forms influencing the amount of organisms are capable of producing slight changes in the degrees of indol production for a few days. Here, however, the doses must be ample and in a few days after being stopped, the condition is back again as it was before they were taken. As a rule though in doses of 0.5 gram ( $7\frac{1}{2}$  grains) three times a day no benefit is secured. Small doses of calomel, 0.006 gm. ( $1/10$  grain), taken twice or three times a day occasionally serves in lowering indol production for the time it is taken. The same may be said of enteric coated capsules of ichthyol, or the taking of 4 cc. (one teaspoonful) of fluid ichthyol dissolved in 120 cc. (four ounces) of water and used as a retention rectal instillation at bedtime and left in all night. In low states of acid-pepsinogen gastric conditions (hypo- and anacidities) the use of dilute hydrochloric acid in "gastron" sometimes serves the purpose for the time being. The alkaline preparations, even the laxative form such as the magnesia products, make the condition worse, the same being true of senna or cascara sagrada. Definitely there are no types of drugs that serve any substantial purpose. Colonic irrigations are contraindicated, and if simple enemas are used to stimulate bowel evacuation, plain tap water or normal saline solution may be employed. Tonics may be required especially iron, in which the organic nonconstipating forms are the more desirable. Weight increase may be accomplished with calcium and Vitamin D preparations.

A practice of value is the regular employment of outdoor exercise. The increased oxygen intake tends to conjugate the toxic bodies in the system and enhances their elimination from the body in the expired air and body evaporations. Golf, tennis and walking a couple of miles a day are worthwhile additions of treatment. Vitamins are often in order, the most valuable being Vitamin B-complex in good sized doses; the best are those from natural sources such as the yeast and wheat kernel preparations. Sedation drugs for the nervous system may be advisable for a time. Vacations from business serve to good purpose. More than eight hours rest at night tends to combat the fatigue.

The results from the proper handling of this biotoxic state are the most worthwhile of the three common forms. The benefits are substantial if the bacteriologic and dietetic treatments have been well carried out, more so than in the acid-fermentative conditions. In the well treated case many disorders in which this toxemia is important often show the most satisfactory results by the intestinal handling.

## REFERENCES

1. Bassler, Anthony: Biotoxic Intestinal Conditions of the Acid Fermentation Type. *Rev. Gastroenterol.* **16**:708-720. (Sept.), 1949.
2. Bassler, A.: A New Method of Treatment of Chronic Intestinal Putrefactions By Means of Rectal Instillations of Autogenous Strains of Human B. Coli. *N. Y. Med. Rec.* (Sept. 24), 1910.

## LIPOTROPIC AGENTS IN THE TREATMENT OF LIVER DYSFUNCTION OF DIABETES MELLITUS

JULIUS POMERANZE, M.D.

and

VICTOR LEVINE, B.S.

New York, N. Y.

Study of the literature reveals that the incidence of liver dysfunction in diabetes is still controversial. However, the important role of the liver in carbohydrate, protein and fat metabolism seems to make the investigation of liver function in diabetes imperative.

Fatty infiltration of the liver has been a common complication of the depancreatized animal though adequately maintained with insulin and proper diet. In humans, hepatomegaly in diabetic patients has been noted by many<sup>1-6</sup>. Warren<sup>1</sup> found evidence of liver involvement in 36.8 per cent of 247 diabetics studied. Anderson<sup>27</sup> believes in the inevitability of the fatty liver. Rabinowitch<sup>7</sup> reported a positive van den Bergh in 34 of 130 diabetics. Diamond<sup>8</sup> on the other hand found the van den Bergh to be normal in 14 of 17 diabetic patients. Meyer<sup>9</sup> reported abnormal quantitative van den Berghs in 28 of 100 patients with diabetes mellitus. The incidence of abnormal blood chemistry was found to be high in a large group<sup>13</sup> of diabetics studied. Others<sup>3-5</sup> found normal blood chemistry values in diabetics, some with hepatic enlargement. Gray<sup>10</sup> reported positive colloidal gold reactions in 36.8 per cent of 247 patients with diabetes.

Other investigators feel that a large majority of individuals developing hyperglycemia after the third decade suffer from low grade liver damage rather than the insulin deficiency implied in a diagnosis of diabetes<sup>11,12</sup>.

The purpose of this study was to determine the effect of the lipotropic factors on blood values in a group of six diabetic patients selected because they exhibited biochemical evidence of liver dysfunction. The patients studied were of widely different ages, weights and insulin requirements. Blood chemistry abnormalities were discovered during routine studies, and were not apparent on clinical examination. These patients were selected from private practice and could be closely followed as to therapy and blood studies. The blood studies included determinations of cholesterol and cholesterol esters, total protein and albumin and globulin, quantitative van den Bergh, thymol turbidity and alkaline phosphatase. These were repeated frequently during the treatment period.

Cholesterol and esters were determined by extraction in Leiboff extractor, using acetone, alcohol mixture over plaster of Paris. The color is developed by the usual method. The normal determination of cholesterol is considered to be 140-170 mg. per cent and for cholesterol esters 90-115 mg. per cent. The normal for total protein of the serum is considered as 6-8 mg. per cent, the albumin fraction 4.6-6.7 per cent and the globulin fraction 1.2-2.7 per cent. The normal for thymol turbidity is less than 5 units; the normal for van den Bergh is less than 0.5 mg. per cent; the alkaline phosphatase 1.5-4.0 units.

Treatment was started after the initial laboratory tests listed above and in each case consisted of a low optimal diet for weight maintenance, high in protein and low in fat. Insulin was continued when previously given and regulated according to urine findings. Two therapeutic formula vitamin capsules\* were given daily. Lipotropic therapy consisted of 18 methischol® capsules daily divided into three doses; which provided 3.6 grams of choline dihydrogen citrate (1.5 grams of choline), 2 grams of methionine, 1 gram of inositol and the extract from 72 grams of liver. In some of the cases the daily dosage was halved after a variable period.

*Case 1:*—S. C. A white male, age 52, was found to be diabetic in 1932 during a routine examination by an insurance company. The only relevant symptom was marked fatigue for 1 year before, often severe enough to cause him to fall asleep in company. The patient never complained of polyuria, polydipsia or nocturia. There is no known family history of diabetes. Control was variable until 1943 when a severe emotional strain precipitated a severe diabetes necessitating the use of insulin. He now is on 50 units of protamine zinc insulin daily and the control is variable. Before therapy his diet was high in fat content. When first seen in February 1949, there were spider nevi of the nose, and the liver was enlarged 3 cm. below costal margin. Blood chemistry studies revealed changes as given below and after the first laboratory studies were made, he was placed on therapy as outlined. The results are tabulated below:

	Choles- terol	Cholesterol Esters	van den Bergh	Total Protein	Albumin	Globulin	Thymol Turbidity
2 6 49	264	193	0.73	7.91	5.62	2.29	9.3
3 18 49	241	172	0.81	7.94	4.68	3.26	10.2
4 26 49	243	169	0.73	8.01	5.72	2.29	9.3
5 22 49	206	147	0.51				6.8
6 18 49	207	150	0.21	7.19	5.49	1.70	1.9

The blood cholesterol was elevated, the quantitative van den Bergh and thymol turbidity were abnormal. With therapy, all returned to normal except the blood cholesterol, which fell almost 60 mg. per cent.

*Case 2:*—N. W. 28 year old white female was first seen in June 1948. In 1934, glycosuria was discovered during treatment for furunculosis. This was controlled with diet for one year, after which dietary restrictions were lifted. Studies of postprandial blood sugars and urines during the ensuing years were negative. In 1945, the patient delivered a large prematurely induced baby, following a severe toxemia which cleared immediately upon delivery. There was no glycosuria and blood sugar studies were normal. In 1947, patient delivered another large prematurely induced baby, following severe toxemia of pregnancy. There was no glycosuria and blood sugar was within normal limits. In September 1947, patient sought medical attention for complaint of marked fatigue and pains in left leg, at which time a diagnosis of diabetes was made. She is now controlled with 30

\*Hypervitamin® capsules, each supplying Vitamin A 10,000 units, Vitamin D, 1,000 units thiamine 10 mg., riboflavin 5 mg., niacinamide 50 mg., pyridoxine 1 mg., calcium pantothenate 5 mg., ascorbic acid 100 mg., and d. alpha-tocopherol 10 mg.

Methischol and Hypervitamin were supplied by U. S. Vitamin Corporation, New York.

unit protamine zinc insulin daily. Blood chemistries of June 1948 are listed below. There was no hepatomegaly. Therapy as outlined above was instituted.

	Cholesterol	Cholesterol Esters	van den Bergh	Total Protein	Albumin	Globulin	Thymol Turbidity	Ceph. Floc.
6/10/48	362	197	1.20	6.02	4.26	1.76	8.4	2+
10/20/48	312	198	0.87	6.71	3.82	2.89	7.7	1+
2/24/49	286	198	0.83				6.3	1+
3/22/49	284	193	0.71					
4/18/49	219	174	0.27	7.41	5.37	2.04	3.1	neg.
6/11/49	214	187	0.22	7.43	4.91	2.52	4.1	neg.

The liver dysfunction in this case as shown by the blood chemistry values undoubtedly played a part in the toxemias of pregnancy. The chemical response to therapy is rather remarkable. Clinically the patient was much improved, the fatigue had disappeared and she was able to perform her normal duties.

*Case 3:*—M. K. 12 year old white male whose diabetes was discovered at the age of six. The symptoms were weakness, polyuria, bed-wetting, nocturia and loss of weight. The diagnosis was not made until a few months after the onset of symptoms. He was kept on fairly high fat diet and globin insulin until October 1948. At that time patient complained of precordial pain on exertion. No enlargement of the liver was found. He came under our care at that time and blood chemistry values found are given below. The patient was put on the outlined therapy. His general condition improved considerably and the precordial pain on exertion disappeared.

	Cholesterol	Cholesterol Esters	van den Bergh	Thymol Turbidity	Alkaline Phosphatase	Ceph. Floc.
10/14/48	309	212	0.62	8.7	5.7	2+
11/18/48	303	207				
12/23/48	287	204				
1/13/49	286	212				
2/3/49	287	211	0.71	7.2	4.3	1+
3/3/49	207	161	0.38	1.8	2.7	neg.
4/21/49	281	193				
5/16/49	221	154	0.17	3.7		neg.

*Case 4:*—R. R. 26 year old white female with onset of diabetes at six years of age. She had been, in the main, adequately controlled throughout except for a few bouts of Ketosis.

The blood chemistries showed evidence of elevation of globulin. Following the outlined therapy, her general condition improved as did her glucose tolerance and insulin requirement.

	Cholesterol	Cholesterol Esters	Total Protein	Albumin	Globulin
6/10/48	193	134	8.04	4.36	3.48
10/20/48	191	132	7.45	3.91	3.54
1/6/49	179	127	7.46	5.21	2.25
3/24/49	176	128			
5/6/49	184		7.56	5.26	2.30

In this case, a disturbance of blood proteins, as evidenced by an increased globulin, was returned to normal.

*Case 5:*—A. R. 54 year old white female. Diabetes was discovered in 1934 during a routine physical examination. Symptoms of pruritus vulvae and polyuria had been present for 6 months previously. This patient has been treated by dietary supervision only. The fasting level of the blood sugar and glycosuria were dependent on weight and diet. When the weight was controlled the urine remained sugar-free, although the patient developed a high renal threshold. In April of 1948, a private laboratory reported blood cholesterol of 384 and 400 mg. per cent using the Schonheimer-Sperry method of determination.

	Cholesterol	Cholesterol Esters	Total Protein	Albumen	Globulin
5/25/48	226	174	7.56	3.82	3.74
11/6/48	191	143			
1/18/49	193	137			
4/8/49	188	136			
6/1/49	183	124	6.94	4.52	2.42

*Case 6:*—B. D. 33 year old white female. In 1945, glycosuria was present but since the fasting blood sugar was normal, no therapeutic measures were adopted. In 1946, during pregnancy, urine examinations were repeatedly negative for sugar and the fasting blood sugar was again normal. However, patient developed a severe toxemia of pregnancy in the eighth month. There was hypertension, edema, albumin, etc. She delivered a 9½ lb. baby after which the symptoms of toxemia disappeared but there was severe postpartum bleeding. A previous pregnancy in 1943 had been uneventful except for prematurity. In September 1948, patient suffered from marked weakness and sores in her mouth. Urine sugar at that time was 5½ per cent. On January 6, 1949 her weight was 177½ lbs.; the urine showed 1 per cent glycosuria with a total excretion of 20 grams in 24 hours. The fasting blood sugar was 250 mg. per cent.

	Total Protein	Albumin	Globulin
2/5/49	7.41	3.26	4.15
4/19/49	7.42	4.17	3.25
5/7/49	7.26	5.21	2.05
6/16/49	7.43	5.22	2.21

This patient suffered two toxemias of pregnancy undoubtedly related to the liver dysfunction as evidenced by disturbance of the albumin-globulin ratio, which returned to normal after therapy. The blood cholesterol was always normal.

#### DISCUSSION

The efficacy of treatment with lipotropic factors methionine, choline and inositol in chronic liver disease has been conclusively established<sup>14-17</sup>. The laboratory findings in the six diabetic patients serving in this study indicated an abnormal function of the liver. Lipotropic therapy produced the results as shown.

There is considerable evidence to support the contention that fat should not be employed in the diabetic diet beyond that needed to supply adequate calories while liberal but sub-average amounts of carbohydrate are supplied. There is

also considerable evidence that the vegetable fats are safest and that protein may be allowed more liberally<sup>21</sup>. These dietary principles were followed in the treated cases.

There is common acceptance of the fact that a nutritional factor is in some way related to the degenerative changes in diabetes. A nutritional factor may contribute to the development of arteriosclerosis in young diabetics<sup>23-25</sup>. One of these factors is the disturbance of fat metabolism. White<sup>26</sup> found hypercholesterolemia in 20 per cent of diabetics with no apparent arteriosclerosis, in 50 per cent with moderate arteriosclerosis and in 60 per cent of those incapacitated by their arterial disease. All other liver function tests were found normal. The relationship between blood cholesterol and arteriosclerosis as to cause and effect is not yet established. There is however a relationship which is probably that of a defective cholesterol metabolism as one of the factors in this degeneration. Anderson<sup>27</sup> believes that the apparent inevitability of a fatty liver in most diabetic individuals, as well as their marked tendency to vascular degeneration seems to go hand in hand and to be related to quirks, errors or excesses in fat metabolism.

Also it appears that a protein deficiency exists in many diabetics and that this deficiency may contribute to the high incidence of degenerative diseases<sup>24-29</sup>. There is a close association between blood cholesterol and serum lipids and blood proteins. It is possible that cholesterol and serum lipids enter vessel walls by penetration together with protein under influence of the arterial filtering pressure. It is therefore important to keep blood proteins high, for lowering them causes them to filter through with the cholesterol.

It must be admitted that blood chemistry studies do not always measure liver dysfunction. There may be a defective cholesterol metabolism without elevation of the blood cholesterol. The circulating protein of the blood is less important in the body economy than protein depots in the tissues which cannot be measured. A slightly elevated globulin in some cases may mask a slight but significant hypoalbuminemia if attention is paid only to total proteins and A-G ratios<sup>30</sup>.

Toxemias of pregnancy are considered by many to be related to protein metabolism and hypoalbuminemia. Treatment with methionine has been effective in this condition<sup>28</sup>. Cases 2 and 6 suffered toxemias of pregnancy probably as a result of the disturbance of blood proteins as indicated in subsequent examinations. It is interesting to speculate as to the possible prevention of these toxemias if the abnormalities had been noted during pregnancy and corrected.

Prolonged feeding of lecithin with striking decrease of serum cholesterol in five cases of hypercholesterolemia and xanthomatosis was accomplished by Adlersberg and Sobotka<sup>31</sup>. Shackelford<sup>32</sup> suggests treating diabetics with lipocaic in addition to diet and insulin to prevent diabetic retinopathy.

Certain individuals seem to possess an inherently defective mechanism for metabolizing fats. The diabetic must be classified among this group. This is certainly true in the face of a defective carbohydrate metabolism which makes constant and probably exhausting demands on the fat metabolism. Possibly this



basic metabolic defect may be the cause rather than the effect. This metabolic weakness often reflects itself in an elevated blood cholesterol, fatty change in the liver, disturbances of protein production reflected in the blood chemistries, etc. Gubner<sup>33</sup> in an extensive review concludes that in the light of our present knowledge, regulation of the blood cholesterol appears to offer the most promising approach to the prevention of arteriosclerosis.

The cases presented in this paper and their response to therapy seem to indicate a therapeutic approach to liver dysfunction in diabetes. The deviation from normal in these six cases was chemically though not clinically apparent. Many cases may be overlooked because the laboratory tests discussed above are not performed. There may be, however, diabetic patients who have chemical disturbances but which cannot be measured by routine methods.

This approach to liver dysfunction in diabetes may be the approach to the prevention and treatment of degenerative diseases through prevention and correction of liver pathology and disturbed blood chemistries<sup>34, 35</sup>.

#### CONCLUSIONS

1. Six cases of diabetes mellitus of widely different ages, duration of diabetes, weight and insulin requirements are presented. All of these cases showed chemical evidence of liver dysfunction and disturbed blood chemistry levels.

2. All cases were treated with suboptimal diet low in fat and cholesterol, high in protein, with a high vitamin intake plus daily divided doses of 3.6 grams of choline dihydrogen citrate (1.5 grams of choline), 2 grams of methionine, 1 gram of inositol and the extract from 72 grams of liver.

3. There was a favorable chemical response to therapy, all patients reverting to within normal limits.

4. These cases suggest that obvious liver dysfunction may be common in diabetes if proper study is made. It is also possible that many so-called normal blood chemistry values may mask mild liver damage.

5. Further investigation of liver dysfunction and disturbed blood chemistry in diabetes mellitus and their effect on degenerative processes is necessary. A method of treatment for abnormal hepatic function in diabetes is presented.

#### REFERENCES

1. Joslin, E. P.: *The Treatment of Diabetes Mellitus*. Lea and Febiger, Phila. 1946.
2. White, P.: *Diabetes in Childhood and Adolescence*. Lea and Febiger, Phila. 1932.
3. Hanssen, P.: Enlargement of the Liver in Diabetes. *J.A.M.A.* **106**:914, 1936.
4. Warren, S.: *The Pathology of Diabetes Mellitus*. Lea and Febiger, Phila. 1938.
5. Marble, A., White, P., Bogan, I. K. and Smith, R. M.: Enlargement of the Liver in Diabetic Children. *Arch. Int. Med.* **62**:740, 1938.
6. Biskind, M. S. and Schreier, H.: On the Significance of Nutritional Deficiency in Diabetes. *Exp. Med. and Surg.* **3**:229, 1945.
7. Rabinowitch, J. M.: Note on the Bilirubin Content of Blood and Urobilinogen Content of Urine in Diabetes Mellitus. *Brit. J. Exp. Path.* **17**:249, 1936.
8. Diamond, J. S.: The Value of Routine Investigation of Blood Bilirubin. *Am. J. M. Sc.* **176**:321, 1928.
9. Meyer, E. L.: Hepatic Function in Diabetes. *Arch. Int. Med.* **47**:182, 1931.
10. Gray, S. J., Hook, W. and Batty, J. L.: Liver Function Studies in Diabetes Mellitus. *Ann. Int. Med.* **24**:72-79, 1946.



11. Newburgh, L. H.: The Control of Hyperglycemia of Obese "Diabetics" by Weight Reduction. *Ann. Int. Med.* **17**:935-942, 1942.
12. Taub, S. J., Shales, W. H. and Rice, L.: Liver Dysfunction Hyperglycemia. *Ann. Int. Med.* **22**:852-862, 1945.
13. To be published.
14. Beams, A. J.: Treatment of Cirrhosis of the Liver with Choline and Cystine. *J.A.M.A.* **130**:190, (Jan. 26), 1946.
15. Cayer, D.: Use of Methionine and Vitamin Supplements in Treatment of Hepatic Disease. *Arch. Int. Med.* **80**:644, (Nov.), 1947.
16. Editorial: Hepatic Cirrhosis Treated with Methionine. *J.A.M.A.* **136**:934, (April 3), 1948.
17. Franklin, M., et al.: Lipotropic Therapy in Fatty Metamorphosis of Liver. *Am. J. Clin. Path.* **18**:273, (April), 1948.
18. Herrmann, G. R.: Experimental and Clinical Studies in Hypercholesterolemia and Atherosclerosis and the Effect of Decholesterolizing Agents. *Am. Heart J.* **33**:711, (May), 1947.
19. Kinsell, L. M., et al.: Effects of Lipotropic Agents on the Protein Balance in Patients with Liver Disease. *Am. J. Med.* **55**:624, (April), 1948.
20. Palmer, L. J.: Medical and Surgical Vascular Complications of Diabetics. *J.A.M.A.* **138**:351-53, (Oct. 12), 1948.
21. Root, H. F.: Diabetes and Arteriosclerosis in Youth. *Am. Heart J.* **35**:860-1, (May), 1948.
22. Editorial: Diabetes and Arteriosclerosis in Youth. *J.A.M.A.* **135**:1074, (Dec. 20), 1947.
23. White, P. and Washow, E.: *Proc. Am. Diabetic Assoc.* **8**:141-163, 1948.
24. Schwartz, G. T.: The Question of Protein Derangement in Diabetic Retinopathy. *Ohio State M. J.* **44**:600-1, (June), 1948.
25. Camela, J. R.: Retinal Complications in Diabetes Mellitus. *Am. J. Ophth.* **31**:638, (May), 1948.
26. Adams, L. J.: Renal Complications in Young Diabetics. *Canad. M.A.J.* **57**:540-543, 1948.
27. Anderson, G. E.: Metabolic Aspects of Vascular Degeneration. *M. Clin. North America*, **33**:783, (May), 1949.
28. Philpott, N. W., Hendelman, M. and Primrose, T.: Use of Methionine in Obstetrics. *Am. J. Obst. & Gynec.* **57**:125-142, 1949.
29. Adlersberg, D.: The Use of High Protein Diet in the Treatment of Diabetes Mellitus. *Proc. Am. Diabetic. Asso.* **6**:409-23, 1936.
30. Youmans, J. B.: Editorial. *Am. J. Med.* **4**:1, (Jan.), 1949.
31. Adlersberg, D. and Sobotka, A.: Effect of Prolonged Lecithin Feeding on Hypercholesterolemia. *J. Mt. Sinai Hosp.* **9**:6, (March), 1943.
32. Shackelford, R. H.: Diabetic Retinopathy. *J. Bowman Gray School Med.* **5**:136-40, 1947.
33. Gubner, R. and Ungerleider, H. E.: Arteriosclerosis. *Am. J. Med.* **56**:60-79, (Jan.), 1949.
34. Joslin, E. P.: Treatment of Diabetes Today. *J.A.M.A.* **140**:581-585, (June 18), 1949.
35. Hueper, W. C.: Prevention and Treatment of Atherosclerosis. *M. Clin. North America*, **33**:773-781, (May), 1949.

## PSYCHOSOMATIC ASPECTS OF PRURITUS ANI

ALFRED J. CANTOR, M.D.

Flushing, N. Y.

### DEFINITION

In pruritus ani we are dealing with a pathological state characterized by anal and perianal itching. This condition often becomes pernicious and intractable.

### CLASSIFICATION

Pruritus ani is not a disease. It is a symptom. Itching is the chief manifestation.

The term "cryptogenic pruritus ani" may be applied to cases without evident etiology. The term "cryptogenic" is preferred to "idiopathic" for the latter indicates a disease without a cause, a type of spontaneous generation. Cryptogenic pruritus ani, by contrast, indicates simply a disease of undetermined etiology. After exhaustive general, local and psychiatric examination all residual cases of undetermined etiology may be classified as cryptogenic.

All other cases should be classified as "secondary pruritus ani". As I have indicated in "Ambulatory Proctology"<sup>1</sup> these cases of cryptogenic pruritus ani represent failures of our diagnostic armamentarium. In these cases treatment must be empirical.

The importance of the classification is that exhaustive study and complete examinations are mandatory before cataloguing. Thus, we are provided with a practical guide not only for diagnosis but for therapy.

### ETIOLOGY

A prolonged discussion of the etiology of pruritus ani in its organic aspects is not indicated here. The etiology may be generally indicated as—

A. Cryptogenic.

B. Secondary.

1. Chemical
2. Mechanical
3. Bacterial
4. Psychogenic
5. Allergic
6. Physical
7. Metabolic

We are here concerned with the mechanism of pruritus ani in the absence of organic changes. This is indeed a puzzling problem. The proctologist is often confronted with the patient who continues to present the subjective sensation of pruritus despite a complete return to normal of the perianal skin after appropriate therapy. Pruritus may continue even after all organic pathology within the rectum or colon, and all systemic disease of a possible inciting nature, has been ruled out. Every proctologist sees patients who continue to demonstrate pruritus after surgical correction of organic rectal disease.

In some of these cases the pruritus is a manifestation of psychopathology. In others it is psychogenic, but in another sense. In still others it is neurogenic. The distinction is as follows:

In cases of true *psychopathology* there will be an obvious personality deviation. These patients present evidence of a psychoneurosis or a border-line or true psychosis. Then there are the cases that are psychogenic in the sense that they result from an emotional conflict, or represent an attempt to escape from the reality of a difficult life-situation. In these cases there may be no personality deviation background. They are more or less recent or acute in origin.

The *neurogenic cases* are of still another type. These patients either present the pruritus as the result of nerve impulses following the path of least resistance or as a projection mechanism. In the *path of least resistance cases* pruritus is the result of nerve impulses passing over well-traveled paths. This is comparable to the subjective sensation manifested by the amputation patient. We are all familiar with the amputation patient who continues to complain of pain in the toes even after the offending member has been removed. Sensations of pain have been carried by the nerves of the extremity so frequently and so consistently that the patient continues to interpret impulses coming from the severed nerve ends as those of pain originating in the amputated toes. These impulses are following well-worn pathways, paths of least resistance. Similarly pruritus ani may represent impulses passing over paths of least resistance.

The brain becomes so accustomed to receiving pruritic impulses along the nerves of the perianal region that, even after the initiating organic factors have been removed, pruritus is still the interpretation given by the brain when impulses pass over these nerve pathways. Thus it is that a completely normal perianal skin, after correction of all organic pathology, can still continue to send impulses along these nerve fibres, and these impulses will be interpreted by the brain as pruritus.

The proctologist should bear in mind the amputation mechanism and employ this illustration in explaining the source of pruritus to the patient.

The *projection cases* need further clarification. These cases may be compared to the projection of an image on a screen from a moving picture or still projector. The operator of the projector represents the subconscious mind. The projector represents the brain and other components of the nerve pathways. The screen is the skin of the perianal region. Pruritus is thus projected by the subconscious mind, acting through the brain and nerves, to the perianal region. Thus it becomes readily obvious that the pruritus does not originate within the skin area, but originates rather in the unconscious mind of the patient. No pathology is found in the perianal skin or the rectum.

The pruritus persists in these cases even after extensive surgery, tattoo or tattoo-neurotomy, or after excision of large wedges of perianal skin. To treat the perianal skin is just as futile as it would be to attempt to remove the projected image from the screen. A temporary barrier may be interposed between the projected image and the screen. Similarly a temporary barrier is interposed by

the above-mentioned operations or by the use of an anesthetic agent. However, once the barrier is removed the image again appears upon the screen. Similarly when the anesthetic agent loses its potency, or the nerves regenerate after a neurotomy, the pruritus returns.

Obviously it would do so. The fault does not lie within the perianal skin. The fault in these cases is in the unconscious mind. Thus, if the projected image on the screen is distasteful it does no good to protest to the screen. We must protest to the operator.

If the operator heeds our instructions, or is in some fashion eliminated, the image would be removed. Similarly, if the subconscious mind can be reached and properly instructed the pruritus will be "removed". These cases are classified as *projection pruritus ani* problems. Projection pruritus must be understood by the proctologist or he will continue to employ local treatments when they are of only temporary or no value.

It will be readily apparent that although the cases of projection pruritus ani may be classified as neurogenic, the same mechanism is employed in many patients with psychogenic pruritus ani. It is difficult to choose the proper terminology for such classification. Psychogenic mechanisms must involve the nervous system. Neurogenic mechanisms may or may not directly involve the psyche. It would be safer to describe the projection pruritus ani mechanism without classifying it as either neurogenic or psychogenic. It must be recognized that we are merely describing a structural-functional mechanism involving the nervous system. Classification is merely a matter of convenience.

It must further be recognized that a combination of factors may be responsible for pruritus ani in any individual case. A problem that may originate in any one of the above groups may rapidly take on characteristics of one or more of the other groups. Further, as a result of scratching or any other irritation or infection, secondary factors appear. The secondary factors may be infectious, mechanical or chemical. Superimposition of such secondary etiologic agents will further complicate the picture. When there are such secondary processes the patient must first receive local management. Infection must be brought under control, irritating chemicals being applied must be stopped, and the skin must somehow be returned to normal. When the skin is normal the psychogenic background must be investigated and properly evaluated. In most cases proper treatment requires proper clarification of the nature of the condition for the patient.

Until proper classification has been made by the proctologist therapy cannot be satisfactory. If there is evidence of psychoneurosis or a psychosis the patient may require psychiatric management. If the pruritus is a manifestation of an acute emotional disturbance it may be possible for the proctologist to handle the problem without consultation. However, consultation serves a very useful purpose in many cases. It indicates to the patient that the pathology lies in the mind as well as in the anal region. It indicates that much of the control of the condition, after the acute factors have been corrected by the proctologist, is within the grasp

of the patient himself. It indicates the complex nature of the condition and the need for close cooperation between the patient and the physician.

#### THERAPY

It is first essential that the acute condition be brought under control by the proper immediate therapy. In my experience the best approach is offered by tattoo-neurotomy. Mercuric sulfide is tattooed into the perianal skin and a blunt subcutaneous neurotomy is performed. In this fashion symptoms are immediately relieved and the skin returns to normal.

Once this has been accomplished proper classification can be attempted. More extensive diagnostic measures may be advised. If there is evidence of a psycho-neurosis or a psychosis the patient may be referred to a psychiatrist, as above indicated.

*The path of least resistance cases* require continuous and prolonged nerve sedation. Of course careful explanation must be given to the patient before any therapy is attempted. After this explanation has been accepted by the patient, nerve sedation may be employed with the realization that it is merely an attempt to reduce the sensitivity of the nerves generally to the impulses that are productive of the pruritus. By reducing the sensitivity of the cerebral cortex and of the nervous system generally, the irritability of the involved nerves will be reduced correspondingly. Pruritus then lessens or disappears.

To achieve this, sodium phenobarbital may be prescribed in one-quarter grain dosage every four hours. Bromides may be preferred, but must be given in small dosage to avoid bromide intoxication. More marked sedation may be attempted with sodium dilantin, grains one and one-half before each meal and at bedtime. This may be given alone or in combination with sodium phenobarbital, one-quarter or one-third of a grain. Muscular incoordination, dizziness, gastric disturbance, bleeding and swelling of gums, loss of weight or a rash may be evidence of sodium dilantin intoxication.

*The projection cases* require careful explanation to the patient. This explanation must be fully understood and accepted by the patient. The nature of the unconscious mind, the relationship of the unconscious mind to pruritus, and the analogy between the unconscious mind and the operator of the projection machine must be clearly understood by the patient.

In addition to this explanation, and its acceptance, a temporary barrier may be interposed between the unconscious mind and the perianal skin in the form of a nerve cutting operation, a tattoo-neurotomy, or the use of long acting anesthetic agents. Central nervous system sedatives may also be indicated.

Sedatives acting upon the autonomic nervous system are of definite value. Bellergal may be prescribed, advising one tablet after each meal and at bedtime. Again sodium phenobarbital alone or in combination with dilantin may be advised.

As I have indicated, the patient must be given the proper insight into his condition. It must be recognized that there will be psychogenic factors in most cases, even those with initial organic pathology. Further, in those cases of original

psychogenic origin organic factors will usually be superimposed. The two cannot be disassociated. If success in treatment is to be achieved it will come as a result of the recognition of the complex character of the initial and ultimate etiology. It matters not at all that a fungus or oxyuris infestation may have been the initiating factor. If the patient has lost sleep and becomes irritable, and has developed emotional conflicts, that patient requires careful psychiatric management as well as treatment of the organic factors. So it is with most cases of pruritus ani. The original factor may have been long since lost under a mountain of superimposed secondary factors.

In all cases the patient must be made to realize the full complexity of the situation. After the acute condition has been brought under control by oil soluble anesthetic injections, tattoo or tattoo-neurotomy, and so forth, the patient will be in a more receptive frame of mind for such discussions. When he no longer has an itch and can sleep the night through, you can expect an intelligent response to a discussion of psychosomatic manifestations. Cooperation can be obtained only after subjective symptoms are under control.

If the proctologist feels incapable of handling this stage of management, or does not desire to give it the necessary time, consultation with the psychiatrist must be sought. The sympathetic and understanding physician can do a great deal for these patients, whether or not he is a psychiatrist.

Sympathetic listening may be sufficient to uncover basic emotional conflicts and acute maladjustments of recent origin. Let the patient talk. Provide him with an understanding of his condition and he will want to talk. Mental catharsis is of profound psychotherapeutic value.

The general management of any individual case requires careful attention to the needs of the particular patient. Pruritus ani of this nature provides an opportunity to practice the true art of medicine.

#### CONCLUSIONS

Pruritus ani is a symptom and not a disease. The etiology is often complicated by emotional factors.

A new classification is introduced, including chronic psychopathology, recent psychogenic problems, neurogenic cases, path of least resistance cases, and projection cases. These are fully discussed.

The therapy of each of these problems is detailed. Close cooperation between the proctologist and the psychiatrist is often indicated. In all cases, however, the patient must be given immediate relief. This is best obtained by the operation of tattoo-neurotomy.

#### REFERENCES

1. Cantor, Alfred J.: Ambulatory Proctology. New York, Paul B. Hoeber, Inc. 1946.

## FURTHER STUDIES ON LIVER FUNCTION TESTS IN THE AGED\*

HENRY RAFSKY, M.D., F.A.C.P.  
and  
BERNARD NEWMAN, B.S., Ch.E., M.S.  
New York, N. Y.

In 1943, we reported the results of an investigation of the liver function tests in a group of so-called normal individuals past the age of 65<sup>1</sup>, when each of the subjects was tested by means of the following determination: 1) oral hippuric acid<sup>2</sup>, 2) intravenous hippuric acid<sup>3</sup>, 3) cholesterol partition<sup>4</sup>, 4) cephalin flocculation<sup>5</sup>, and 5) the bromsulfalein test<sup>6</sup>. At that time it was found that 86 per cent of those subjects who were investigated showed abnormal hepatic function on the basis of one or more of the above mentioned tests.

The two possible reasons which were advanced for these findings were: a) that the so-called normal variations of the results obtained in young healthy adults had to be modified when hepatic function tests were applied to aged subjects, and, b) that the results were actually subclinical manifestations of liver dysfunction. These findings, and others which we have published since<sup>7-11</sup>, seem to indicate that the second explanation is the more likely.

It was thought of interest, in the light of our subsequent publications, to investigate the liver function tests in another group of individuals past the age of 65 years, and to compare these findings with our previous results.

### EXPERIMENTAL PROCEDURE

This study consisted of a series of 42 subjects between the ages of 65 and 86 years, whose mean age was 79.8 years. Sixteen were males, and 26 were females. All of the subjects were apparently normal individuals who were ambulatory and on the regular institutional dietary regimen which had been shown to be adequate in caloric content and vitamins<sup>12</sup>. Those subjects who gave a history of liver disease or who had symptoms of hepatic disturbance were not included in this study. The liver functions tests which were employed in this investigation were: 1) the oral hippuric acid test<sup>2</sup>, 2) the cephalin flocculation test<sup>5</sup>, 3) the thymol turbidity test<sup>13</sup>, 4) cholesterol partition<sup>4</sup>, and 5) the bromsulfalein test<sup>6</sup>. We substituted the thymol turbidity test for the intravenous hippuric acid test, because of the greater feasibility of the former and also because it has since been shown to be a rather sensitive indicator of liver function. All of the determinations were performed with the subjects in the fasting state.

### RESULTS

In Table I are shown the results of various liver function tests, together the subjects' ages and sex.

It will be seen that 70 per cent of the subjects showed subnormal excretion of hippuric acid when sodium benzoate was administered orally. Some degree of the flocculation of cephalincholesterol antigen was exhibited by 76 per cent

\*From The Home and Hospital of the Daughters of Jacob, Bronx, N. Y.

This Study was aided by a grant from William R. Warner & Co., and the Gustavus and Louise Pfeiffer Research Foundation.



of the subjects; 21 per cent had a thymol turbidity greater than 5 units, which may be considered as the maximum limit of normal. A free cholesterol of over 30 per cent was shown by 71 per cent of the experimental group, while 20 per cent had an abnormal bromsulfalein retention of 5 per cent or more after thirty minutes.

TABLE I

No.	Age	Sex	Hippuric Acid	Cephalin Flocculation	Thymol Turbidity	Total Cholesterol	% Free	Bromsulfalein Retention
1	74	F	0.75	1 plus	4	201	40	N.D.
2	65	F	2.28	2 plus	3	196	44	35-neg.
3	78	F	1.25	2 plus	4	296	47	35-neg.
4	70	F	1.17	3 plus	6	225	46	40-neg.
5	65	F	2.33	1 plus	5	220	36	N.D.
6	81	F	3.65	neg	2	156	29	N.D.
7	80	F	1.4	3 plus	7	201	66	25-0
8	68	F	1.82	2 plus	6	170	11	15-0
9	76	F	1.36	neg	2	207	33	N.D.
10	74	F	1.9	1 plus	5	200	19	N.D.
11	68	M	2.4	2 plus	4	175	39	40-neg.
12	70	M	1.6	neg	4	185	5	20-0
13	83	M	2.2	neg	3	201	48	20-10
14	77	F	1.2	1 plus	5	162	37	30-5
15	77	F	2.04	1 plus	6	191	26	25-0
16	84	F	2.3	1 plus	5	320	44	N.D.
17	62	M	0.7	1 plus	7	196	42	N.D.
18	68	F	1.68	1 plus	2	271	52	40-0
19	82	F	2.2	neg	2	196	35	50-0
20	65	F	1.4	1 plus	4	351	53	30-0
21	67	F	1.1	1 plus	5	447	49	N.D.
22	75	F	1.4	1 plus	4	267	52	40-0
23	80	M	1.6	2 plus	5	230	24	N.D.
24	80	M	1.9	1 plus	3	218	50	N.D.
25	76	M	1.6	1 plus	4	185	49	30-0
26	83	M	3.4	1 plus	6	175	41	N.D.
27	80	F	0.86	neg	2	171	56	25-0
28	70	F	2.1	neg	2	272	49	20-0
29	75	M	0.44	1 plus	6	340	63	N.D.
30	82	M	2.1	1 plus	4	126	23	N.D.
31	72	M	1.8	1 plus	5	171	13	20-0
32	80	M	1.1	1 plus	4	135	24	N.D.
33	80	F	2.1	1 plus	6	196	16	60-0
34	69	F	1.5	1 plus	4	220	46	N.D.
35	72	M	1.2	1 plus	4	238	27	N.D.
36	78	F	1.7	neg	4	165	42	35-5
37	85	M	0.42	neg	2	383	48	35-0
38	71	M	1.1	1 plus	5	366	37	45-5
39	75	M	3.2	1 plus	4	236	43	30-5
40	71	F	1.4	1 plus	5	323	34	25-0
41	75	F	2.6	1 plus	6	218	44	25-0
42	79	F	2.0	neg	5	276	51	20-5

It may be noted that at least one of the liver function tests was abnormal in 97 per cent of the subjects, and only one subject, or 3 per cent, had normal hepatic function according to the results of the present study. In 11 subjects, two of the liver function tests were abnormal; in 22 subjects, three of the tests showed hepatic dysfunction; and in 6 subjects, four of the tests indicated liver impairment.

## COMMENT

In another group of so-called normal individuals there was laboratory evidence of liver impairment in the majority of the subjects. In the previous study 86 per cent, and in the present investigation, 97 per cent of the individuals, showed laboratory but not clinical evidence of hepatic dysfunction. This study verifies our contention previously expressed that a subclinical state of liver impairment is rather common in elderly people. There are two questions which arise in this connection; firstly, whether these changes are reversible, and secondly, whether these liver function tests have any relationship to the biochemical avitaminosis which had been observed in so-called normal old people. Another important aspect in connection with the present study is, how often do we see subclinical hepatic dysfunction in so-called normal people under sixty years? What relationship do these findings play in other disease such as cardiovascular and renal pathology? These various factors are undergoing investigation at the present time.

## SUMMARY

1. Further liver function studies were made in a group of apparently normal elderly individuals.
2. The liver function tests which were employed in this study were: the oral hippuric acid, cephalin flocculation, thymol turbidity, cholesterol partition and bromsulphalein tests.
3. One or more of these tests showed evidence of hepatic impairment in 97 per cent of the subjects as compared to 86 per cent in a previous study.

## REFERENCES

1. Rafsky, H. A. and Newman, B.: Liver Function Tests in the Aged, *Am. J. Digest. Dis.* **10**:66 1943.
2. Quick, A. J.: The Synthesis of Hippuric Acid—A New Test of Liver Function, *Am. J. M. Sc.* **185**:630, 1933.
3. Quick, A. J.: Intravenous Modification of the Hippuric Acid Test for Liver Function, *Am. J. Digest. Dis.* **6**:716, 1939.
4. Bloor, W. R. and Knudson, A. J.: Cholesterol and Cholesterol Esters in Human Blood, *J. Biol. Chem.* **27**:107, 1916.
5. Hanger, F. M.: The Flocculation of Cephalin—Cholesterol Emulsions by Pathological Sera, *Tr. A. Am. Physicians.* **53**:148, 1938.
6. Rosenthal, S. M. and White, E. C.: Clinical Application of the Bromsulphalein Test for Liver Function, *J.A.M.A.* **86**:1112, 1925.
7. Rafsky, H. A. and Newman, B.: Relationship of Niacin to Porphyrinuria in the Aged, *Am. J. M. Sc.* **205**:209, 1943.
8. Rafsky, H. A. and Newman, B.: Cholesterol Studies in the Aged, *J. Lab. & Clin. Med.* **27**:1563, 1942.
9. Rafsky, H. A., Newman, B. and Jolliffe, N.: A Study of the Carotene and Vitamin A Levels in the Aged, *Gastroenterology*, **8**:612, 1947.
10. Rafsky, H. A. and Newman, B.: Nutritional Aspects of Aging, *Geriatrics*, **2**:101, 1947.
11. Rafsky, H. A. and Newman, B.: A Study of the Vitamin A and Carotene Tolerance Tests in the Aged, *Gastroenterology*, **10**:1001, 1947.
12. Rafsky, H. A. and Newman, B.: An Electrophoretic Study of the Plasma of the Aged Subjects, *Am. J. M. Sc.* **217**:206-210, 1949.
13. Rafsky, H. A. and Newman, B.: Correlation Between Liver Function and Vitamin Status in the Normal Aged Subjects, *In press*.
14. Rafsky, H. A. and Newman, B.: A Quantitative Study of Diet in the Aged, *Geriatrics*, **3**:267-272, (Sept.-Oct.), 1948.
15. MacLagan, N. F.: The Thymol Turbidity Test as an Indicator of Liver Dysfunction, *Brit. J. Exp. Path.* **25**:234, 1944.

## IDIOBLAPTIC DISEASES OF THE ALIMENTARY TRACT

ARTHUR F. COCA, M.D.

Oradell, N. J.

Idioblastic allergy has been defined<sup>1</sup> as a familial, constitutional susceptibility, which is clearly separate from atopic allergy (hay-fever group), in the following characters:

1. The skin-tests with the identified specific excitants are regularly negative.
2. At least one of the parents of the affected person is always found to be affected. An individual lacking the susceptibility always has at least one parent who lacks it.
3. More than 90 per cent of the white population are affected with idioblastic allergy.
4. Exposure by the affected individual to any of his specific allergens under suitable conditions always causes acceleration of the pulse.
5. With one exception (asthma), possibly a second (neurodermite, not proved), the symptoms of idioblastic allergy are not caused by the reaginic mechanism of atopic allergy. They include migraine and other recurrent headache, essential hypertension (Price<sup>2</sup>, Coca<sup>1</sup>, Meyer<sup>3</sup>), glaucoma (Berens et al.<sup>4</sup>), (chronic urticaria<sup>5</sup>), epilepsy<sup>1</sup> and many others.

The preventive treatment of any of the symptoms consists simply in identifying and avoiding the foods, inhalants, etc., which cause acceleration of the pulse. Practically, the patient is advised to avoid tobacco (which affects about 50 per cent of the cases<sup>6</sup>), and to control exposure to house-dust with Dust-Seal<sup>7</sup>. The common foods are then tested *singly* in *small* portions at one or one-and-a-half hour intervals, the pulse being counted through the day at half-hour intervals.

After elimination of all pulse-accelerating items the pulse becomes "stabilized", that is, the range from the low to the high count is not greater than 16 beats (usually less) and the daily maximum does not vary more than two beats, usually not more than one. This under the conditions of usual physical activity.

Failure to stabilize the pulse under this procedure may be due to unwitting exposure to other inhalants (newsprint, wood-smoke, paint-fumes, etc.), or the sensitivity to a large number of foods—sometimes to all or nearly all foods. In this latter case the fact can be readily revealed with the use of the procaine block of the stellate ganglion, which temporarily abolishes a large number of the food-sensitivities in all such cases. This result can then be made permanent through a limited sympathectomy (2 or 3 lumbar ganglia on one side). Inhalant sensitivities are not abolished by block or operation. In the 24 cases treated in this way recovery has been rapid with no complications; nor has there been a recurrence of a single one of the many abolished food-sensitivities.

The early publications on idioblastosis properly concerned themselves chiefly with the establishment of the fundamental characters of the newly defined category of disease, and they were not devoted to the identification of any one clinically defined condition as idioblastic. Instead, the principle was stressed that the very association of the different manifestations that followed exposure to the allergens in successive experiments and that disappeared together upon avoidance of all allergens proves their common—idioblastic—etiology.

Milo G. Meyer's<sup>3</sup> recent report illustrates the same attitude, while paying special attention to his illuminating series of cases of essential hypertension.

Meyer remarks "Gastrointestinal complaints, when functional, I believe, are all of allergic origin". My own experience in this symptomatic category is in agreement with that opinion, and the respective cases that are to be described below seem sufficient, to present separately as supportive evidence.

*Canker sores*, which were first shown to be of allergic origin by W. L. Beecher<sup>4</sup>, have occurred in about 25 per cent of my food allergic patients and have affected about the same proportion of high-school students, in a survey of 269 individuals. *They do not occur in nonallergic families.*

The canker sore would seem to serve as a useful analogy, both in its pathology and its demonstrated allergic cause, for speculation concerning the nature of peptic ulcer.

*Ulcer* has been suspected to be of an allergic origin and Rowe has reported six cases of "ulcer type of pain" among 150 cases of "gastrointestinal food allergy". However, Vaughan<sup>5</sup> excludes ulcer from consideration as primarily allergic.

#### CASE REPORTS

*Case 1:*—Dr. P. (age 46), under observation for some weeks by a prominent surgeon, who had made the diagnosis of peptic ulcer, had been ordered to limit his diet to milk. The ulcer-pain had grown more severe and the surgeon advised resection. Learning from Dr. P. about his condition and his surgeon's advice, and finding a pulse of 104 shortly after the last ingestion of milk, I suggested that he simply avoid dairy products and eat any other desired foods. After the first meal under this regime his pulse did not exceed 78, which remained the maximal count thereafter. On the following day the ulcer-pain had disappeared but it recurred on three separate occasions shortly after the experimental ingestion of milk. After each of those tests the pulse-rate rose to more than 100.

Operation was, of course, no longer indicated and there has been no recurrence of symptoms in the succeeding seven years. Dairy products have been rigorously avoided.

*Case 2:*—N. C. (age 46) had suffered gastric resection for his ulcer with no resulting abatement of his symptoms. In fact these became so much worse that he was making arrangements for his retirement. Resorting, at last, to the pulse-dietary course he found milk to be his only pulse-accelerating food. Strict avoidance of milk was soon followed by disappearance of all gastric symptoms and of others, equally serious, which will be described below.

*Case 3:*—Dr. L., (age 76) long a sufferer from duodenal ulcer (x-ray diagnosis) had been a life-long smoker (1 cigar and a number of pipefuls of tobacco daily). At the beginning of the pulse-dietary course Dr. L. stopped smoking entirely. In sending me his record, one month later, he wrote "Since following this regimen—I have had *no stomach distress*". On an unrestricted variety of foods the pulse ranged finally from 59 to 68-69—a normal range. Thus there were no food-sensitivities. The causal relationship of the tobacco allergen to the duodenal ulcer has not been experimentally established in this case.

Among Meyer's<sup>3</sup> series of 116 cases "in whom a successful result was obtained" with the pulse-dietary method are two of "peptic ulcer".

*Indigestion and heartburn:*—In the allergy-questionnaire "Indigestion" has included gas-formation in the stomach, nausea, vomiting, and cramp-like gastric pain. These symptoms have been frequently referred to as "nervous indigestion". Heartburn is popularly known as "acid indigestion". Neither of these conditions affect nonallergic individuals and all those who are affected have been entirely relieved when the pulse has been stabilized through avoidance of all allergens.

Severe heartburn has been observed regularly to follow exposure by inhalation to the allergen of tobacco and that of fresh newsprint and carbon-paper in an individual whose diet is strictly limited to nonallergens. Some food allergens may regularly cause cramp-like gastric pain but never heartburn; on the other hand, the inhalant excitants of heartburn never cause cramp-like pain in the individual just referred to.

*Constipation:*—The slowing of peristaltic movement caused by an allergenic food has been visualized in barium series in a study by Fries and Mogil<sup>10</sup>.

In the early experiences with the pulse-dietary method patients were not questioned about constipation until several had, with astonishment, volunteered the information that they had become regular soon after the identification and avoidance of their food allergens. Some had been constipated as long as they could remember. Thereafter that symptom became a regular item of the questionnaire. None of the marked cases of constipation has failed to become regular after stabilization of the pulse. All of the three cases of glaucoma reported by Berens et al.<sup>4</sup> as successfully treated with the pulse-dietary technic, were constipated and all became regular.

*Colitis:*—The first case in whom the pulse-dietary method was used was one of angina pectoris with gloomy prognosis. The attacks of angina ceased with the avoidance of pulse-accelerating foods (see also Meyer<sup>3</sup>) and at the same time a long-standing mucous colitis disappeared. Both symptoms have continued preventable in the individual throughout the succeeding 14 years. Occasional indulgence in pulse-accelerating foods is sometimes followed by a brief recurrence of the colitis and or mild anginal pain.

*Case 4:*—J. C. age 19 suffered a sudden abdominal pain which was localized in the right lower quadrant. Other signs and laboratory findings pointed to appendicitis. Operation revealed a normal appendix but an acutely inflamed colon.

The surgeon believed the condition to be allergic and the pulse-dietary tests found ginger to be the patient's sole allergen. Recently, he had been indulging liberally in pumpkin pie heavily spiced with ginger. He was also fond of ginger-ale.

*Hemorrhoid:*—I have not been able to find in the literature any suggestion of possible allergic etiology of this rather common ailment (about 25 per cent of 230 adults were found to be so affected; children under 17 rarely).

Like many other idioblastic manifestations, this was first suspected as such when it disappeared in an affected man soon after all pulse-accelerating foods had been identified and avoided.

*Case 5:*—This person, age 68, with a history of over 40 years of migraine, severe indigestion and constipation, had first noticed fresh blood in the stool three years previously. The bleeding gradually increased and later there was a more or less severe burning pain after each movement. Recently there had been a protrusion of a small mass with the more difficult eliminations.

Having been found allergic to nearly all foods, he resorted to a conservative sympathectomy, which abolished his sensitivity to 15 important foods. Several weeks after the operation he realized that the symptoms caused by the hemorrhoid had ceased, and that the mass which had been easily palpable had disappeared. There have been occasional recurrences, always following violations of the allergic dietary restrictions, but none in the past year and a half of rigorous avoidance of allergenic foods.

*Case 6:*—A high-school teacher, age 42, director of athletics, complained chiefly of migraine and abnormal tiredness. His pulse accelerating allergens are pea, bean, peanut and tobacco. Avoidance of these was promptly followed by disappearance of the symptoms. At the same time he reported the disappearance of annoying symptoms that had been caused by an internal hemorrhoid. This was in September 1946. This patient is also markedly allergic to paint-fumes, (heart-burn, nausea, headache, irritability). During a month in which the interior of his school was being repainted he suffered a moderate recurrence of his hemorrhoidal symptoms. After the painting was completed the symptoms gradually subsided. The patient had consulted his physician, Dr. Isadore Gittelsohn of River Edge, New Jersey at the first appearance of the condition. Dr. Gittelsohn has kindly permitted me to include his notes on the case which follows.

"In August 1946, Mr. G. M., age 41, consulted me on account of a hemorrhoidal formation that he had first noticed about a month earlier. Examination showed the condition to be based near the mucocutaneous junction and lying within the rectum. There had been no noticeable bleeding, no pain and no protrusion. The patient noticed only an internal sense of fullness and annoying discomfort when driving and especially at night.

"Surgery was not indicated and the nocturnal discomfort could be minimized with suppositories (anuso).

"Today, (January 5, 1948) I examined the patient again. The hemorrhoid has completely disappeared. There is a small anterior fissure which causes him no discomfort. He states that since his first visit he has completed the pulse-dietary course, which you, Dr. Coca, have applied with some of my other patients."

*Case 7:*—This patient, N. C., is referred to in the discussion of ulcer as formerly a sufferer from gastric ulcer. External hemorrhoids, which were intermittently very painful, appeared at the age of 12 or 13 years. In 1918 operation

was performed and there was relief from the pain for about two years when the condition recurred. In 1923-4 bleeding began and in 1925 a second operation produced another two year period of "betterment". In 1930 the external formations were joined by bleeding internal ones and two or three years later protrusion of the rectum began, which continued to worsen until January 1946.

At that time the patient's major food allergen (milk) was identified and excluded from his diet. Bleeding gradually lessened as did also the extent of rectal protrusion. There has been no bleeding since April 1947 and the rectal protrusion has become almost negligible. The formerly palpable internal hemorrhoids have been reduced so that nothing palpable remains of them. There has been no constipation during the greater part of the hemorrhoidal affection. The patient concedes the primary allergic causation of his hemorrhoidal process but is inclined to consider changing local conditions, especially the varying consistency and quantity of the rectal contents, as significant contributory factors.

Out of the histories of these three instances of hemorrhoids can be formulated a rational theory of their etiology.

The idioblastic nature of the condition is indicated in the permanent relief that followed avoidance of the pulse-accelerating foods in two cases and the sympathectomy in one. This evidence is supported by the recurrence of the lesion upon protracted exposure to an inhalant allergen (paint fumes) in one case.

One of the familiar primary lesions of food-allergy is a collection of edematous fluid, restrained in an area of greatly varying extent by an allergic obstruction of unknown nature, and subject to the vis-a-tergo pressure of the circulating blood. Common examples of this allergic lesion are the wheal, the swollen mucous membrane of chronic rhinitis and bronchial asthma, the meningeal edema of migraine, the glaucomatous eye<sup>4</sup> and angioneurotic edema.

If venous channels are included in the area of allergic edematous pressure the flow of blood from them can be restrained, causing their distention. When the hemorrhoidal area is affected, a circumscribed mass is produced consisting of distended veins and waterlogged interstitial tissue. When the allergic obstruction to the outflow of the fluid is loosed and normal lymph circulation is restored, pressure on the hemorrhoidal veins is released and the normal blood circulation through the area is resumed. This concept is, to be sure, based on circumstantial evidence. It is suggested as a "working hypothesis", which may serve to stimulate interest in the further use of the pulse-dietary technic for the relief of a distressing ailment.

#### REFERENCES

1. Coca, A. F.: Monograph, *Familial Nonreaginic Food-Allergy*, 2nd Ed., 1945, Charles C. Thomas, Springfield, Illinois.
2. Price, A. S.: *Rev. Gastroenterol.* **10**:233-245, 1943.
3. Meyer, Milo G.: *Ann. Allergy.* **6**:417-427, 1948.
4. Berens, C., Girard, L. J. and Cumming, E.: *Ann. Allergy.* **5**:526-535, 1947.
5. Coca, A. F.: *Ann. Allergy.* **3**:101-109, 1945.
6. Coca, A. F.: *Ann. Allergy.* **5**:458-466, 1947.
7. Coca, A. F.: *Ann. Allergy.* **6**:506-510, 1948.
8. Beecher, W. L.: *Clin. Med. & Surg.* **35**:903, 1928.
9. Vaughan, W. T.: *Practice of Allergy*, C. V. Mosby & Co., St. Louis, Mo.
10. Fries, J. H. and Mogil, M.: *J. Allergy.* **14**:310-321, 1943.



## CHAPTER ACTIVITIES

### ARGENTINA CHAPTER

At a meeting of the Argentina Chapter of the National Gastroenterological Association, held in Buenos Aires, Argentina, on 24 June 1949, Dr. Carlos Reussi of Buenos Aires was elected President to succeed Dr. Arturo Richieri.

---

### NEW JERSEY CHAPTER

A meeting of the New Jersey Chapter of the National Gastroenterological Association was held on 22 May 1949 at Asbury Park, N. J.

The meeting was well attended and was followed by a dinner arranged under the direction of Dr. Samuel H. Rubin of Asbury Park, N. J.

Officers of the Chapter elected for the coming year are: President, Dr. Earl J. Halligan, Jersey City, N. J.; Vice-President, Dr. Sidney Rosenthal, Newark, N. J.; Secretary, Dr. Benjamin J. Macchia, Jersey City, N. J.; Members of the Executive Council: Drs. Harrison R. Wesson, Montclair, N. J.; Samuel H. Rubin, Asbury Park, N. J.; Julius Gerendasy, Elizabeth, N. J.; Arthur J. Statman, Newark, N. J. and S. William Kalb, Newark, N. J.; Delegates to the National Council are Drs. Kalb and Goldstein.

---

## NEWS NOTES

### E. R. SQUIBB & SONS TO FURNISH TELEVISION AT COURSE IN GASTROINTESTINAL SURGERY

Dr. William Reid Morrison, President of the National Gastroenterological Association and Chairman of the Committee on Arrangements for the Course in Gastrointestinal Surgery which we are giving at the Boston City Hospital on 27, 28, 29 October 1949, immediately following our 14th Annual Convention, announced that arrangements have been made with E. R. Squibb & Sons to present black and white telecasts of operations performed at the Boston City Hospital during the period of the course in Gastrointestinal Surgery.

Telecasts will be on a daily schedule from 9 a.m. to 5 p.m. with operations being performed in two amphitheaters at the Boston City Hospital. While admission to the course will be by matriculation card only, upon payment of the \$35.00 fee for tuition, admission to the telecast will be open to the general medical public. Those attending the Convention are urged to stay over and view these interesting telecasts.

---

### ERATTA

Two errors appeared in the printed program for the Convention in the September 1949 issue of THE REVIEW OF GASTROENTEROLOGY which we should like to correct.

The first of these will be found on page II in information concerning registration, etc. All meetings will be held on *Eastern Standard Time* instead of Daylight Saving Time as indicated in the program.

On page XIV the title of the second motion picture film to be shown is listed as Ambulatory Gastroenterology. This should have read "Ambulatory *Proctology*".

#### FELLOWSHIP KEY

The newly authorized key for Fellows of the National Gastroenterological Association is now available and may be ordered directly from the National Headquarters. The key contains the seal of the Association with the word "Fellow" and the abbreviation "N.G.A." It is of ten karat gold and will have the initials of the purchaser and the date of his advancement or election to Fellowship engraved on the back without any additional cost.

To obtain these keys, Fellows may write to the National Headquarters, 1819 Broadway, New York, N. Y. enclosing their check in the amount of \$7.50 which includes federal tax and handling charges.

For  
Anti-Flatulent  
Effects in Intestinal  
Putrefaction and  
Fermentation

## NUCARPON<sup>®</sup>

Each tablet contains: Extract of Rhubarb, Senna, Precipitated Sulfur, Peppermint Oil and Fennel Oil, in a high activated willow charcoal base.  
Action and uses: Mild laxative, adsorbent and carminative. For use in indigestion, hyperacidity, bloating and flatulence.

1 or 2 tablets daily 1/2 hour after meals.

STANDARD PHARMACEUTICAL CO., INC.

Bottles of 100.

1123 Broadway, New York

## ABSTRACTS

### GASTROINTESTINAL TRACT

**CHRONIC LEUKEMIA OF LONG DURATION WITH A REPORT OF 31 CASES WITH A DURATION OF OVER FIVE YEARS.** H. C. Moffitt, Jr. and John H. Lawrence. *Ann. Int. Med.* 30:778-790, (Apr.), 1949.

Often the disease is present for one or two years, before the patient seeks medical aid. Wintrobe and Hasenbush (1939) found that one-and-a-half to two-and-a-half years passed between the finding of signs of the disease and the development of symptoms. Minot and Issacs (1924) estimate that in 100 cases of chronic myelogenous leukemia an average of eight months passed between the onset of symptoms and the first visit to a physician, whereas in 72 cases of chronic lymphatic leukemia a nine months period elapsed.

The actual disease process may antedate the onset of symptoms by a considerable period. Moeschlin (1943) concluded that "a critical review of the literature fails to disclose a single well-authenticated case in which leukemia was actually cured".

It is generally agreed that there is not yet clean cut evidence that treatment has significantly prolonged the duration of any type of chronic leukemia. Radiation therapy does lengthen the period of comfortable and useful life. Charles W. McGavran reported a case of a man of 48, with lymphatic leukemia who survived for twenty years. The authors believe this to be the longest survival period recorded.

The authors conclude that many patients with chronic leukemia respond well to treatment and have relatively long comfortable lives.

HYMAN I. GOLDSTEIN

**GASTROINTESTINAL LESIONS OF PERIARTERITIS NODOSA.** L. E. Wold and A. H. Baggenstoss. *Proc. Staff. Meet. Mayo Clinic.* 24:28-35, (Jan. 19), 1949.

This report is based on 30 recorded cases of periarteritis nodosa in which necropsy was performed in the years 1926 to 1946 inclusive. Necropsy disclosed periarteritis nodosa of the abdominal viscera in 21 (69.9 per cent) of the 30 cases. Symptoms referable to the gastrointestinal tract were present in 23 (76.7 per cent) of the 30 cases. Abdominal pain was the more frequent symptom. In five of the 21 cases in which abdominal pain was a prominent symptom, necropsy failed to disclose any involvement of the abdominal viscera. Melena occurred in 5 cases. In 4 of these cases, necropsy disclosed hemorrhagic and ulcerative lesions of the large and small intestine. In the 5th case, periarteritis was confined to the wallbladder and liver, without lesions of the intestine.

In three cases, necropsy disclosed mesenteric thrombosis associated with focal gangrene and local or generalized peritonitis.

Hyperbilirubinemia was present in 3 of the cases. In 2 of these there was no clinical evidence of jaundice, but necropsy disclosed intraabdominal periarteritis nodosa. The third case with jaundice, at necropsy disclosed massive infarction of the intestine and multiple infarcts of the liver.

Kussmaul and Maier in 1866, mentioned prominently abdominal symptoms in a case of periarteritis nodosa (*Dtschs. Arch. f. klin. Med.* 1:484-518, 1866).

HYMAN I. GOLDSTEIN

### STOMACH

**GASTROJEJUNOCOLIC FISTULA.** Henry F. Faxon and William G. Schoch. *New England J. Med.* 240:81, (Jan. 20), 1949.

The findings in nine cases of gastrojejunocolic fistula are presented. The symptomatology is usually attributable to the secondary effects of diarrhea induced by the reflux of irritating large-bowel contents into the upper jejunum and stomach. Passage of gastric material into the colon through the fistula in the reverse direction is delayed, as a rule, by a valve-like action of the jejunal mucosa.

The treatment of gastrojejunocolic fistulae is surgical and consists of removing the fistula, restoring bowel continuity and correcting the ulcer diathesis.

Preparation of the patient for excision of the fistula should include the institution of an ascending colostomy as recommended by Pfeiffer as a preliminary procedure in all patients whose general condition is unsatisfactory.

The tendency in these patients to reactivate an ulcer after an excision of the fistula and restoration of intestinal continuity is so strong that unless corrective surgical measures have been carried out at the earlier operation they should be adopted before the patient is finally discharged from the hospital.

A case is cited from the first time in which, after excision of the fistula, transthoracic vagotomy was used as the definitive treatment of the ulcer diathesis. This patient was asymptomatic a year after the vagus resection.

FRANZ J. LUST

**RADIATION THERAPY IN PEPTIC ULCER. AN ANALYSIS OF RESULTS. A STUDY OF SELECTED CASES. EFFECT ON THE GASTRIC MUCOSA.** W. E. Ricketts, W. L. Palmer, Jos. B. Kirsner, E. M. Humphreys and A. Hamann, *Gastroenterology*, 11:789-832, (Dec.), 1948.

In three sections, the authors report their experience with radiation therapy in peptic ulcer. Palmer, Kirsner and their associates at the Billings Medical Clinic are evidently very favorably impressed as to the value of irradiation in the management of peptic ulcer and hyperacidity. They state that "Roentgen irradiation of the acid-secreting portions of the stomach may produce profound depression of gastric secretion persisting for variable periods of time. The effect on the course of the ulcer depends upon the degree and duration of the secretory depression". "Irradiation of the acid secreting portions of the stomach is a valuable procedure in the treatment of peptic ulcer, the effect being proportional to the reduction in gastric secretion".

The achlorhydria varies in duration from a few days to as long as eight years. Ulcer pain disappears during achlorhydria, and achlorhydria of three months duration invariably results in healing of the ulcer. The incidence of recurrence is definitely lowered by irradiation. Reappearance of acid gastric secretion precedes recurrence of the ulcer.

Moderate roentgen irradiation of the fundus and body of the stomach in man produces an acute transitory inflammation of the gastric wall. Atrophy of the gastric mucosa often ensues, it is uniformly present in patients with prolonged post-radiation anacidity. Clinically, severe irradiation gastritis, has not worried the authors even though it consists of an acute inflammatory process, "involving all elements of the gastric wall, especially the mucosa"; characterized by degenerative changes, hyperemia, hemorrhage and increased infiltration, and atrophy of the mucosa!

HYMAN I. GOLDSTEIN

**PEPTIC ULCER. MODERN CRITERIA FOR DIAGNOSIS AND ATTEMPTED DIAGNOSIS OF HEALING.** Dwight L. Wilbur and Malcolm S. M. Watts, *Radiology*, 52:800, (June), 1949.

The clinical diagnosis of peptic ulcer depends upon the history given by the patient. The so-called "typical history" is present and diagnostically accurate in 80 to 90 per cent of all cases. In others there may be an "atypical" story, the symptoms may be due to complications, or there may be pain or vomiting of the crisis type. Radiologic diagnosis, which is said to be 95 per cent accurate, depends largely on demonstration of a gastric or duodenal niche or constant deformity of the duodenum. When there is a discrepancy between the clinical and radiological findings the clinician will be influenced in his diagnosis by such factors as: 1) the character of the patients complaints and their resemblance to the symptoms of ulcer; 2) the certainty of his clinical impression of ulcer; 3) his past experience as to the accuracy of reports from the radiologist who examined the patient; 4) the presence of other evidence of organic disease; 5) the results of subsequent clinical and radiologic observations of the patient.

There is no satisfactory clinical evidence of healing of an ulcer. Persistence of symptoms means activity of the lesion, but the reverse does not hold. Radiologic evidence for healing is unsatisfactory, also, however, disappearance of the niche and the occasional return of the duodenal bulb to normal probably indicate healing.

Among the interesting but inconclusive findings were that the radiologist made the diagnosis of gastric and duodenal ulcer more frequently than the clinician was willing to accept it; that when the radiologist reported irritability or inflammatory change in the stomach or duodenum, a diagnosis of ulcer was not made clinically in a single instance, and that when a clinical history typical of ulcer was present the radiologist made a diagnosis of gastric or duodenal ulcer in 28 of 41 cases and reported findings of a normal stomach and duodenum in only three. FRANZ J. LUST

**ACHLORHYDRIA AND PEPTIC ULCER: A FURTHER STUDY OF THE ROLE OF PEPTIC ACTIVITY IN THE PATHOGENESIS AND COURSE OF PEPTIC ULCER.** W. E. Ricketts, W. L. Palmer, Jos. B. Kirsner and A. Hamann, *Ann. Int. Med.* 30:24, (Jan.), 1949.

The authors present a further study on the occurrence of ulcer in acid and non-acid stomachs and, more particularly, on the effect of achlorhydria upon the course of peptic ulcer. Their earlier studies tended to show the invariable presence of acid gastric juice in patients with chronic peptic ulcer and the absence of ulcer in patients with persistent achlorhydria as in pernicious anemia.

In each of five hundred consecutive patients with active duodenal ulcer reviewed by these authors, the maximum response to histamine stimulation was above 40 clinical units. They have never seen an active duodenal ulcer in a case of pernicious anemia.

In gastric ulcer, the authors found nine of 170 cases were reported as achlorhydric after first stimulation with histamine, in all of these, however, free hydrochloric acid was found in

subsequent examinations. It is interesting to note that in twenty patients the maximum free acidity, even after histamine stimulation was less than 20 clinical units.

The authors conclude that "Chronic peptic ulcer occurs only in association with acid gastric secretion. Achlorhydria lasting longer than three months produces complete healing of peptic ulcer irrespective of the age of the patient or the duration of the disease. Spontaneous or induced achlorhydria, if permanent, produces permanent healing of peptic ulcer". HYMAN I. GOLDSTEIN

---

THE PHENOMENON OF PEPTIC ULCER. II. Necheles. *Am. J. Digest Dis.* 16:237-241, (July), 1949.

The author approaches the etiology of peptic ulcer from a somewhat different angle. He argues that the ulcers occur mainly in predilected areas. Ulcers are usually round-shaped. The most plausible answer seems to be vascular changes in these areas, which devitalizes these areas and an acute ulcer soon turns into a chronic rounded ulcer. From here on the author quotes experiments and solid arguments and finally winds up with the following *modus operandi* for production of duodenal and gastric ulcer.

The higher centres in the brain are irritated by various stimuli etc. This in turn stimulates the vagus nerve. Acetylcholine is produced by vagus stimulation. The acetylcholine is taken up into blood stream. Experiments show that acetylcholine contracts the blood vessels of the stomach and dilates blood vessels in legs. The blood vessels in the pylorus and duodenum are end vessels. This continuous contraction is enough to blanch the mucosa. Acid, and pepsin destroy the avascular mucosa and an ulcer forms. The ulcer becomes chronic by continuous secretion of acetylcholine which causes constriction of vessels and the acid and pepsin continues to be secreted and ulcer becomes chronic. Thus the main cause of ulcer is contracted vessels due to secretion of acetylcholine. LIONEL MARKS

---

VAGOTOMY. CLINICAL EXPERIENCES DURING FOUR YEARS. K. S. Grimson, R. W. Rundles et al. *J. A. M. A.* 139:508-513, (Feb. 19), 1949.

Vagussection (vagectomy) was revived and reintroduced as a surgical treatment for intractable and/or recurrent peptic ulcer by Dragstedt and Owens (1943), when in January 1943, Dragstedt of Chicago, began to do supradiaphragmatic vagectomy, later changing to transabdominal trans-infradiaphragmatic vagectomy.

Dragstedt and his associates have performed more than five hundred vagus resections for peptic ulcer with very few failures. Of course, the attempt to give relief to sufferers from intractable and recurring ulcers by some form of vagotomy, was made many times by many surgeons during the past several decades, with and without success.

Since the work of Dragstedt, W. Walters, Schoen and Griswold; Ralph Colp of New York; Grimson, Griswold, Sanders, Ravdin, Philip Thorek of Chicago; Chapman and Moore, K. A. Meyer, and George Crile, Jr. of Cleveland, and others, thousands of patients have already been vagotomized or vagectomized.

In the past, there were some good results, but also many failures. Now a *much more complete vagus resection* is done, usually transabdominally (subdiaphragmatically), with much better results.

The authors review the more recent literature (1943-1948), and report on their own experiences, the general results of transthoracic vagotomy for duodenal ulcer in forty-nine patients; combined transthoracic or transabdominal vagotomy and gastroenterostomy for duodenal ulcer in twenty-nine patients; and, of vagotomy for stoma ulcer in nineteen patients. In 9 of these patients stoma ulcer followed subtotal resection of the stomach and in ten after gastroenterostomy. There occurred a number of poor results (in half the patients) after vagotomy without gastroenterostomy—and therefore vagotomy as a sole procedure for duodenal ulcer is unsatisfactory.

Vagotomy with concurrent gastroenterostomy has yielded encouraging results in cases of duodenal ulcer. Vagotomy has brought about healing of stoma ulcer after subtotal gastric resection, and, after gastroenterostomy. Vagotomy has been of help in benign gastric ulcer, but persistence or recurrence has been frequent. Gastroenterostomy should be done in addition to vagotomy, if gastric resection is not elected. HYMAN I. GOLDSTEIN

---

THE POSTGASTRECTOMY SYNDROME. David Adlersberg and Ernest Hammerschlag. *Surgery*, 21:720, (May), 1947.

A group of fourteen patients, who for many years after partial gastrectomy for ulcer had been unable to gain weight and presented difficult nutritional problems, have been investigated. The symptoms were analyzed and divided in two groups: early and late postprandial symptoms. The early symptoms were caused by mechanical factors, small stomach and rapid emptying, and over-

flooding of the small intestine. The late symptoms were due to chemical factors, hypoglycemia secondary to the exaggerated postprandial hyperglycemia, and occasionally secondary to disturbed intestinal absorption. The postgastroctomy syndrome was caused by a sequence of these early mechanical and late chemical factors, exaggerated by distinct psychoneurotic stigmas. Many of these individuals were stomach conscious. The shock of the operation, the postoperative course, later the postgastroctomy symptoms, and finally the diminished physical and mental resistance associated with underweight and malnutrition exaggerated the stomach awareness. The ultimate effect was a conflict between the postprandial symptoms—the late manifestations of which are relieved by food—and the fear to eat. The treatment of these patients presents a series of difficult clinical, nutritional and psychological problems, all of which require consideration. FRANZ J. LUST

### INTESTINES

**THE CLINICAL MANAGEMENT OF DIARRHEAS.** Chauncey D. Leake. *Postgrad. Med.* 6:1-5, (July), 1949.

The author lists the causes of diarrhea as: (1) amebiasis, (2) bacillary infection, (3) food poisoning, (4) salmonella infection, (5) heavy metal or other chemical compound, (6) allergic reactions, (7) psychoneurotic reactions. He further lists diarrhea as a secondary symptom in: (1) avitaminoses, (2) thyrotoxicosis, (3) kidney, liver and heart disease, (4) ulcerative colitis, (5) intestinal neoplasm. The most important factor in the pathological physiology of diarrhea is local irritation.

The management of diarrheas depends on recognition of the causes. Amebiasis is present more frequently than usually suspected and the dysentery from it may be controlled by bismuth subcarbonate orally in doses of four grams every two to four hours. The author advises carbarsone or vioform or diodoquin one quarter of a gram twice daily for ten days; if the liver is involved, emetine hydrochloride in doses of one milligram per kilogram intramuscularly daily for ten days. Avoid arsenicals in liver and kidney involvement and watch emetine for damage to the heart. Members of the family should be examined for the presence of carriers. For rectal and lower colon treatment carbarsone and vioform retention enemas may be given. Vioform may also be dusted into the rectal area. Sulfathaladine in doses of one quarter gram per kilogram daily orally in six equal parts is useful in the diarrheas of bacillary infection. Additional precautions should be observed in controlling the dehydration, restoring the water balance, preventing reinfection, and maintenance of water soluble vitamin intake. The author mentions that the causes of food poisoning as classified by Dack (1) chemicals, (2) poisonous plants, such as mushrooms, (3) animals such as shellfish, (4) botulism, (5) food contamination, (6) salmonella infection, (7) trichinosis. The treatment most effective here is bismuth subcarbonate or powdered opium sixty milligrams followed during convalescence by tea. The author further suggests the use of aureomycin, fluids, and electrolytes in infantile diarrhea. In the treatment of locally irritating chemical enteritis precipitation of the chemical in the bowel by giving tannin, charcoal, egg white and flour-water is the method of choice. The kidney should be guarded by alkalization, and BAL should be given. Allergic conditions should be treated by antihistaminics, and elimination of the allergic factors. Psychotherapy may be needed by the psychoneurotic individual.

In the summary, it is to be emphasized again that the specific management of diarrhea is based essentially upon the recognition of the cause. The general management of diarrhea is wisely based on an appreciation of the extent of the pathologic physiology involved in the symptoms in the individual patient under consideration. JACOB A. RIESE

**LESIONS OF THE COLON AND RECTUM.** Richard B. Cattell. *Postgrad. Med.* 6:120-126, (Aug.), 1949.

The author cites three patients to illustrate the success of surgery in ulcerative colitis, malignancy and polyposis.

The first case was that of a young woman of twenty-one with ulcerative colitis that did not respond to medical treatment who had an ileostomy with subsequent total colectomy. She is wearing a Koenig-Rutzen bag.

The second patient was a man of forty-six in whom a polyp of the rectum was discovered at the age of twenty-seven, and fulguration of the polyp was done. He subsequently had a resection for carcinoma of the splenic flexure, and two years later had another resection for two carcinomas of the right colon, and two years later had a carcinoma of the transverse colon. This man is perfectly well and active at the present time. The author stresses the need for constant x-ray and sigmoidoscopic examinations for polyps, and suggests that a total colectomy should have been done at the age of twenty-seven.

The third case was that of a woman of twenty-three with congenital multiple polyposis. The author advises subtotal colectomy in these cases with anastomosis of the ileum to the rectosigmoid and fulguration of the rectal polyps.

Malignancy arising in a colon involved with ulcerative colitis spreads early. If a patient with healed ulcerative colitis begins to bleed from the rectum, malignancy must be suspected. Continued bleeding in ulcerative colitis is an indication for surgery. It is possible to restore continuity after ileostomy in ten per cent of the cases. The operative mortality for ileostomy is four per cent.

The Traveller type of ileostomy bag is used postoperatively, and after complete healing it is replaced by the Rutzen bag which is cemented to the skin.

JACOB A. RIES

#### PATHOLOGY AND LABORATORY RESEARCH

THE LABORATORY DIAGNOSIS OF AMEBIASIS. Wm. C. Macdonald. J. Missouri M. A. 46:477, (July), 1949.

Macdonald reiterates the pitfalls in laboratory diagnosis of amebiasis and concludes that "the only certain means" of diagnosis of this infestation is by recovering the organism from the stool or the complement fixation reaction. The incidence in the United States varies from 5 to 12 per cent of the population, with many cases being "symptomless" carriers.

The trophozoite and the cystic forms are described and a caution added that one negative stool examination does not rule out infestation with *E. histolytica*. A method, which Macdonald prefers, of obtaining the organism from the stool using the zinc sulfate centrifugal flotation technic is described. As the name of the technic implies, several suspensions of one gram of fecal material in 10 parts of lukewarm tap water are made until the supernatant fluid is clear; this being obtained by centrifugation. To the final sediment, 33 per cent zinc sulfate is added, resuspended and centrifuged. The sediment is then examined on a slide after being stained with an iodine solution.

Proctoscopic examination reveals that the amebic lesions are small, pin point areas of inflammation surrounded by edema, or small, projecting, nodular elevations open at the apex. Through the opening, gelatinous material containing active trophozoites can be removed.

The majority of lesions occur in the cecal area, so that the organism may be obtained by: (a) saline purgation, using the first liquid stool passed or (b) saline enema, using the second portion expelled from a two quart enema. The expelled materials must be examined immediately.

The author does not heartily recommend the stool culture technic because of its many pitfalls. The complement fixation reaction, while being a specific test for amebiasis, requires a potent antigen which is difficult to obtain and is unstable.

A. X. ROSSIE

#### PANCREAS

HYPERINSULINISM, A FACTOR IN THE NEUROSES. Richard H. Hoffmann and Emanuel M. Abrahamson. Am. J. Digest. Dis. 16:242-247, (July), 1949.

The authors present numerous cases, with various neuroses and psychoses whose symptoms were completely relieved by diet. This diet raised the blood sugar level. Their conclusion is that hypoglycemia caused by hyperinsulinism causes ill nourishment of brain and causes many of the common neuroses and psychoses. Although their theory is open to question, their case reports and results are very good.

LIONEL MARKS

#### BOOK REVIEWS

DISEASES OF THE LIVER, GALLBLADDER AND BILE DUCTS. S. S. Lichtman, M.D., F.A.C.P., Assistant Professor of Clinical Medicine, Cornell University Medical College; Assistant Attending Physician, New York Hospital; Adjunct Physician, Mt. Sinai Hospital. New York. Second Edition. Revised. 1135 pages, 147 illustrations and 2 color plates. Lea and Febiger, Philadelphia, Pa., 1949. Price \$18.00.

Dr. Lichtman who has written a great deal on liver disease and published numerous articles on the subject has again given to the medical profession a completely revised edition of his previous monograph on the same subject.

The present volume includes many new diagnostic and therapeutic agents including the antibiotics.

The chapter on infectious hepatitis, which during the last war was rampant and caused many victims to remain with permanently damaged livers, has been completely rewritten by Dr. Lichtman.

Liver biopsies and liver function tests have received consideration as to their relative value in diagnosis, prognosis and treatment.



There are 29 Chapters, each one complete in itself. The paper, type and illustrations are all well set-up. Here and there the reader will find reference numbers in the text which have no relation to the table of references also occasional misspellings, for example "anxiety necrosis".

These should not in any way detract from the well rounded all inclusive information which is contained between the covers.

The publishers have spared no expense to make this volume a "must" for every practicing physician. It is highly recommended by the reviewer.

**MEDICAL ETYMOLOGY, THE HISTORY AND DERIVATION OF MEDICAL TERMS FOR STUDENTS OF MEDICINE, DENTISTRY, AND NURSING.** O. H. Perry Pepper, M.D., Professor of Medicine, University of Pennsylvania. 263 pages. W. B. Saunders Company, Philadelphia, 1949. Price \$5.50.

The author of this book has done the medical student, as well as the physician and many members of medical faculties a great service.

The author with much modesty, proclaims this etymology to be for medical and dental students and for students of nursing. However, this reviewer from personal knowledge during forty years of medical practice, knows that a great many of our teachers and leaders in medicine, and many lesser lights of teaching faculties and hospital staffs, are in need of the help that such a work as this can provide these older men in the professions.

The reviewer disagrees with the author that "ninety-nine of every hundred students know little or nothing at all of the classics—of Latin or of Greek, except the letters of their fraternity pins"! Today a medical student in the approved grade A Medical Schools has completed a four-year high school course, and usually, a four year college course. He has had Latin, and perhaps Greek, and French or German or Spanish. He has some knowledge of Latin, and, also, of some modern language.

When Doctor Pepper and the reviewer became medical students a high school graduate was readily admitted to the medical school without any college education whatever! But, even then most medical students had had three or four years of Latin and perhaps, some Greek, or some modern language.

This unusual volume is, therefore, recommended, not only for students, but for the practitioners, and teachers of these students.

There are some errors of omission and commission. However, these shortcomings will no doubt be corrected in the next edition or revision. For example, on page 38—*Fagus*—of Latin derivation equals "wandering"; on page 152, under "vagotomy"—Greek—*vagus* (see page 38) and *tome* equals "a cutting".

On page 119, Doctor Pepper says "The word *Physician* is derived from the ancient Latin word *physicus* equals 'physical philosopher', for in the field of physical philosophy, medicine was the zenith". . . today, the doctor of medicine must teach the ways of health to his patients, including those still healthy. Let these words suffice, without the introduction of such absurdities as internist or diagnostician.

What of the trained and not-so-well trained "flood" of "cardiologic" internists, "allergic" internists, "tuberculosis" internists, the "geriatric" internists, the "arthritic" internists, the "hematologic" internists, the "metabolic" and "nutritional" internists, the "endocrinologic" internists.—? Yes, the reviewer agrees with the author, that, with a multiplicity of specialties and subspecialties, and ever growing larger in number, this is rapidly becoming an "absurdity"!

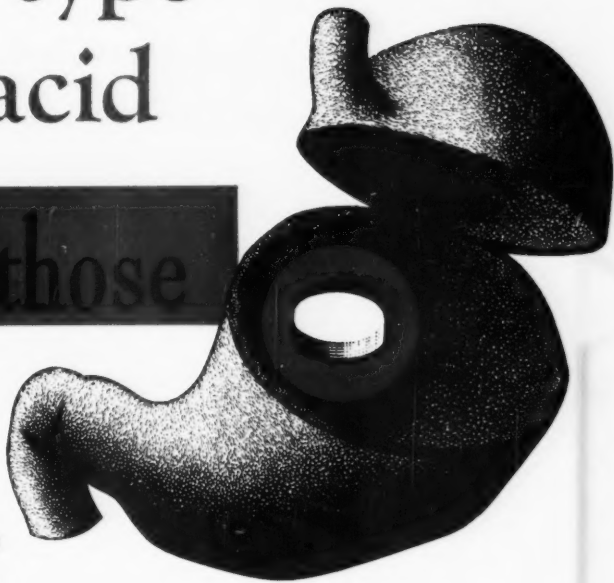
We do need good physicians as never before, and, perhaps more medical philosophers, and fewer specialists and subspecialists in the field of internal medicine. It is at times tragic, to see some of the subspecialists, overlook almost entirely the patient, as a human machine with complaints and concentrate on some unrelated matter of no consequence because this happens to fall within his limited and narrowed interest! Yes, this has reached a point where Doctor Pepper considers it an "absurdity".

The reviewer recommends this timely and helpful work, not only to students, but to all physicians, internists, and medical philosophers, and, even to surgeons, specialists and subspecialists and especially, to all teachers of medical, dental, and nursing students.

# New type antacid

## Carmethose

# for better management of peptic ulcer



### Carmethose gives prolonged control with no adverse effects

Carmethose promptly lowers gastric acidity, and its protective tenacious coating has been observed in the stomach for as long as three hours.<sup>1</sup>

Adult dose is 2 to 4 tablets or teaspoonfuls 4 times daily between meals.

**Carmethose Tablets:** sodium carboxymethylcellulose, 225mg, and magnesium oxide, 75mg. Bottles of 100

**Carmethose Liquid:** 5% concentration of sodium carboxymethylcellulose. Bottles of 12 oz.

## Ciba

PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY  
CARMETHOSE—Trade Mark

2/1504M

#### Advantages over adsorbent gels:

1. *Non-constipating*—hydrophilic gel promotes normal elimination.<sup>1, 2</sup>
2. *Reduction of acidity in two ways*—prompt action by ion exchange is followed by classical buffering action.
3. *Palatable*—small, easily swallowed tablets and pleasantly flavored liquid—preferred by patients.<sup>2</sup>

#### Advantages over soluble alkalis:

1. *No acid rebound*—effectively inhibits acid-pepsin activity, with no secondary hypersecretion.
2. *Protective coating*—mucin-like gel is rapidly formed and clings to ulcer crater and gastric mucosa.
3. *Non-systemic*—cannot disturb acid-base balance because it is non-absorbable.

1. Brick, I.B.: Amer. J. Dig. Dis., *In Press* 2. Bralow, Spellberg & Necheles: Scientific Exhibit #1112, A.M.A., Annual Session 1949

*Kindly mention the Review when writing to Advertisers*

★ for safe and effective  
treatment of chronic constipation

# L.A. FORMULA

L.A. Formula is indicated in the safe and effective prevention and treatment of chronic constipation. It supplies bulk and lubrication to the intestinal contents by absorbing water and produces normal peristalsis. L.A. Formula is easy-to-take and pleasant-to-take and furthermore, it's economical. Prescribe it in the next case of chronic constipation. Send for a sample now.

Contains Plantago Ovata Concentrate with 50% dextrose as a dispersing agent.



MANUFACTURERS OF KONSYL\*

**BURTON, PARSONS & COMPANY**  
WASHINGTON 9, D. C.

\*THE ORIGINAL PLANTAGO OVA TA CONCENTRATE



*when MIGRAINE attacks*

**FIRST EFFECTIVE**

**oral TREATMENT  
OF MIGRAINE ATTACK**

Sandoz proudly announces the first effective oral treatment of migraine—

Clinical investigation<sup>1</sup> demonstrated that 80% of a series of cases experienced good results. Best results were obtained in migraine, histamine and tension headaches.

Friedman,<sup>2</sup> in a large series of migraine cases, found Cafergone 55% more effective than ergotamine tartrate alone.

Later reports<sup>3, 4</sup> were equally favorable.

# Cafergone

(ergotamine tartrate 1 mg.; caffeine 100 mg.)

(Experimentally identified as E.C. 110)



Originality • Elegance • Perfection

**SANDOZ PHARMACEUTICALS**

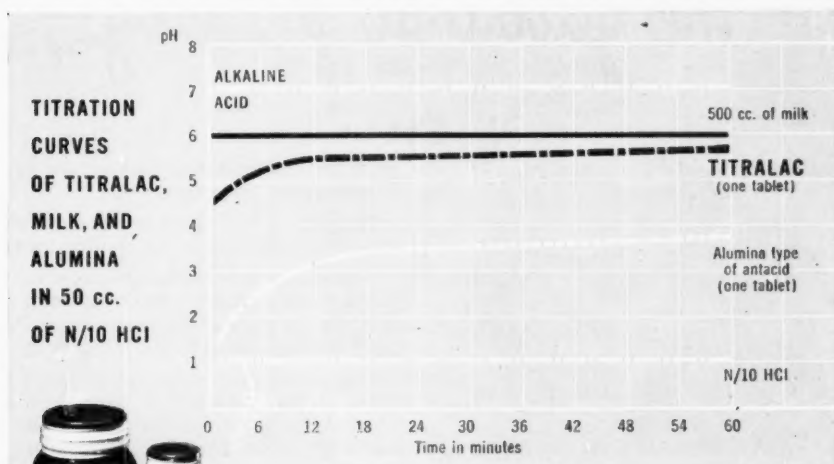
Division of SANDOZ CHEMICAL WORKS, INC.

NEW YORK 14, N. Y. • CHICAGO 6, ILL. • SAN FRANCISCO 8, CALIF.

WE INVITE YOU TO VISIT OUR BOOTH 11 AT THE FORTHCOMING CONVENTION OF THE NATIONAL GASTROENTEROLOGICAL ASSOCIATION, OCTOBER 24-26, 1949.

1. Horton, B. T., Ryan, R. E. & Reynolds, J. L., Proc. Staff Meet. Mayo Clinic, 23:105, Mar. 3, 1948.
2. Friedman, A. P., N. Y. State J. of Med. (in press).
3. Ryan, R. E., Postgraduate Medicine (in press).
4. Hansel, F. K., Annals of Allergy (in press).

# NON-SURGICAL TREATMENT



## OF PEPTIC ULCER

Gastroenterologists have long endorsed the use of milk, when practicable, for its ideal acid-converting power and buffering capacity.<sup>1,2</sup> In a recent comprehensive paper, Aaron<sup>3</sup> and others<sup>4,5,6</sup> express a preference for calcium carbonate as the antacid to be employed.

TITRALAC, by combining proper proportions of purified calcium carbonate and the amino acid glycine, provides an acid-converting and buffering effect practically equivalent to that of fresh milk, as shown in the above chart.\* Just 1 TITRALAC tablet is equivalent to an 8-ounce glass of milk in antacid effect and provides quick and long-lasting relief from the distressing symptoms of hyperacidity.

The very agreeable taste of soft-massed TITRALAC tablets, which is achieved without employing taste-disguising, acid-generating sugars in the

formula, makes them as acceptable to patients as an after-dinner mint. Prescribing TITRALAC eliminates the probability of unfavorable reactions often associated with the taking of metallic-tasting, astringent tablets or liquids, and ensures adherence to the prescribed dosage.

TITRALAC tablets are supplied in bottles of 100 and convenient-to-carry packages of 40. TITRALAC powder is also available, in 4-oz. jars.

### REFERENCES

1. Rossett, N. E., and Flexner, J.: *Ann. Int. Med.* 18: 193 (1944).
2. Freezer, C. R. E.; Gibson, C. S., and Matthews, E.: *Guy's Hosp. Reports* 78: 191 (1928).
3. Aaron, A. H.; Lipp, W. F., and Milch, E.: *J. A. M. A.* 139: 514 (Feb. 19) 1949.
4. Kirsner, J. B., and Palmer, W. L.: *Illinois M. J.* 94: 357 (Dec.) 1948.
5. Kimball, S.: in *Practice of Medicine* (Tice). Hagerstown, Md., W. F. Prior Company, Inc., 1948; p. 210.
6. Special Article: *M. Times* 76: 10 (Jan.) 1948.

\* The formula of TITRALAC is one whose composition and mode of action are recognized by U.S. Patent No. 2,429,596.

*Samples and literature to physicians upon request.*

**SCHENLEY LABORATORIES, INC., 350 FIFTH AVENUE, NEW YORK 1, N. Y.**

© Schenley Laboratories, Inc.

*Kindly mention the Review when writing to Advertisers*

# The year that got away—



**L**ONG AGO, he'd planned the year, the day, the hour of his retirement.

But now, a year beyond that date, his desk is still open . . . the weekday trout still in the brook.

What happened? Unexpected expenses . . . Nickie starting college . . . the last of Mom's hospital bills. He never really figured it out. But the happy day he planned was no longer in sight.

A lot of years are getting away from a lot of people . . . because they don't have a plan which helps them save money *regularly*. But there are people who are making the most of the years, by investment in United States Savings Bonds.

It's an easy, automatic way of insuring a financial future, thanks to two simple, *automatic* plans:

- 1. The Payroll Savings Plan**, at the firm where you are employed. You get a bond just as often as you like.
- 2. If not on a payroll**, join the Bond-A-Month Plan at your bank.

Don't let another year—another moment—escape you. Sign up today.

*Automatic saving is sure saving—  
U.S. Savings Bonds*



Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.





*“only*  
**LOBELIN**  
*answered our need”*

**LOBELIN<sup>®</sup>** is an effective immediate respiratory center stimulant. Its efficacy has been proven by years of medical usage in combination with oxygen therapy and standard resuscitative measures.

“..... **LOBELIN** was injected intravenously and in a few seconds cyanosis had disappeared, respirations became normal and surgical procedures could be resumed. In the remaining twenty-one cases, other methods were used and the high percentage of mortality which occurred convinced us that *only LOBELIN answered our need for a quick-acting, satisfactory respiratory stimulant.*”<sup>1</sup>

<sup>1</sup>LOBELIN in Asphyxia During Gun-shot Surgery, Toman, Andrew J., American Journal of Surgery, May, 1943, pp 270-1.

**INDICATED IN:**

*asphyxia neonatorum* to terminate respiratory distress in the newborn.  
*anesthesia* when respiration is diminished or abnormal.  
*emergencies in general practice* when respiratory stimulant is desired.

**LOBELIN** (alpha lobeline-hydrochloride)

1 cc. ampuls • 1/20 gr. for intravenous or intramuscular use  
3/20 gr. for intramuscular use • for both adults and infants.

**Bischoff**

**ERNST BISCHOFF COMPANY, INC. • IVORYTON, CONN.**



# IMPROVEMENT IN THE CLINICAL PICTURE



- Early Cirrhosis
- Fatty infiltrations of the liver associated with alcoholism
- Infectious hepatitis
- Fatty livers associated with toxic states

with

## "SYRUP CHOLINE (FLINT)"

Representing Choline Dihydrogen  
Citrate 25% W/V

- Pleasantly palatable
- Stable



To be sure your patients get  
Choline dihydrogen citrate  
25% W/V—Specify "Syrup  
Choline (Flint)".

Pints and Gallons

**FLINT, EATON & COMPANY**  
DECATUR, ILLINOIS

### IN COMING ISSUES

Papers presented before the 14th Annual Convention and those comprising the Course in Gastrointestinal Surgery.

In addition to other original articles, abstracts of current literature, editorials and book reviews.

Use convenient coupon below for insuring uninterrupted receipt of your copies.

*Use this blank for subscribing to*

### ***The Review of Gastroenterology***

1819 Broadway  
New York 23, N. Y.

Enclosed please find \$.....for which you are to enter my subscription to THE REVIEW OF GASTROENTEROLOGY, starting with the.....issue, as indicated below.

☐ 1 year \$5.00    ☐ 2 years \$9.00  
(\$7.00 foreign)    (\$13.00 foreign)

Name .....  
(please print)

Address .....

City ..... Unit ..... State .....





# Ulcerative Colitis

New oral management revealed\*

## Peptic Ulcer

Duodenum desiccated and defatted by a special process (Viodenum), is being evaluated clinically in the treatment of ulcerative colitis and peptic ulcer, on the hypothesis that it may render the mucosa more resistant to chemical and mechanical injury and improve the mechanisms of repair... *Preliminary observations indicate a thorough clinical trial with Viodenum in those patients refractory to other treatment.* The medication should be viewed as supportive therapy to the usual treatment.

### Viodenum

Provided in powder or 10 grain tablets

Raw\* duodenum, desiccated and defatted at 37° C.

\*"Rawness" measured by: presence of enzymes identified with the raw tissue of the freshly killed animal

Administration of Viodenum may result in—  
 relief of symptoms  
 diminishing bowel movements  
 diminishing exacerbations  
 normal stool consistency  
 gain in weight

#### \*References:

- \*Streicher, M. H. F., Grossman, M. I., and Ivy, A. C., *Gastroenterology*, **12**, 371 (1949)
- \*Raimondi, P. J., Goetzl, F. R., *Permanente Foundation Medical Bulletin*, **7**, 1 (1949)
- Gill, A. M., *Lancet*, **2**, 202 (1945); *Proc. Roy. Soc. Med.*, **39**, 517 (1946)
- Rivers, A. B., *Am. J. Dig. Dis.*, **2**, 189 (1935)

V i o d e n u m

VIOLIN LABORATORIES

MONTICELLO, ILLINOIS, U. S. A.

Literature available on request

*Kindly mention the Review when writing to Advertisers*

*When an*  
**INTERNAL ANTISEPTIC**

per os or per rectum is indicated, the germicidal activity and lack of toxic action point to

*Alpha Naphco*  
as the  
**LOGICAL**  
**THERAPEUTIC AGENT**

•

The logical selection for combatting microparasitic invasion, whether local or systemic, should be a resorbent, non-selective and parasitotropic agent, devoid of discernible organotropism.

Alpha Naphco, administered internally, tends to accent the appetite and to change the color of the urine, darken the defecate and reduce the fecal odor sometimes to zero. This indicated killing of the proteolytic bacteria affords a simple check upon bactericidal utility. No toxicity, no adverse action upon blood bodies (as tested upon the human subject) nor upon normal cell life processes (as evidenced by the microrespirator) results. When taken internally Alpha Naphco is excreted through all the emunctories.

Based upon extensive animal investigations the relative parasitotropic and organotropic activities indicate 123.4 as the chemotherapeutic index of Alpha Naphco Liquid. This margin of safety permits extended freedom of dosage as internally ingested or externally applied.

*Literature and samples on request.*

***Carel Laboratories***

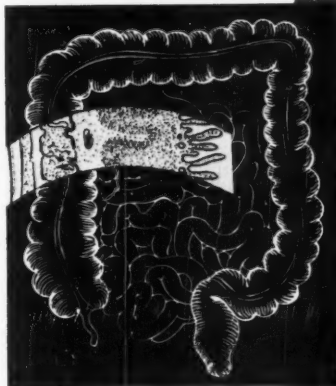
12512 WEST WASHINGTON BLVD.  
CULVER CITY, CALIFORNIA

*a directed therapy for  
intestinal infection*

# THALAMYD

phthalylsulfacetimide-Schering

THALAMYD\* has useful properties for combating sulfonamide-sensitive enteric organisms in bacillary dysentery, in ulcerative colitis, and in the preoperative sterilization of the intestine. Therapeutic dosage does not lead to detectable sulfonamide blood levels, hence there is no problem of systemic toxicity sometimes occurring with "absorbable" sulfonamides. Renal damage and aberrations of the blood picture do not occur. THALAMYD is absorbed, however, by diffusion, into the intestinal wall, where effective local concentration is established—where highest antibacterial action is required. Thus,



**in preoperative sterilization,** the bacterial flora can be virtually eliminated after four to five days treatment with THALAMYD. Thus elective intestinal surgery can be planned for this optimum time and carried out with minimal risk of infection;<sup>1</sup>

**in ulcerative colitis,** there is both symptomatic and objective benefit in more than half of the cases, according to x-ray and sigmoidoscopic criteria.<sup>2</sup>

**THALAMYD,** Schering's phthalylsulfacetimide, tablets of 0.5 Gm., bottles of 100 and 1000 tablets.

1. Seneca, H., and Henderson, E.: In press.

2. Heincken, T., and Seneca, H.: Rev. Gastroenterol. 15:611, 1948.

\*THALAMYD trade-mark of Schering Corporation

*Schering*



CORPORATION • BLOOMFIELD, NEW JERSEY

THALAMYD

# compare

## RESINAT'S RESULTS WITH ANY OTHER FORM OF ANTACID THERAPY

Mounting clinical evidence continues to support claims as to the efficacy of **RESINAT**. The latest report on 120 patients treated with **RESINAT**, demonstrates complete symptomatic relief in 48-72 hours and regression of the ulcer crater in 2-4 weeks in the majority of cases.<sup>1</sup>

### RESINAT:

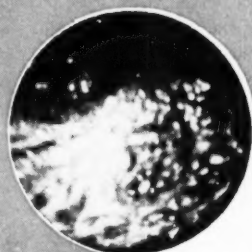
1. Is completely nontoxic.
2. Acts as an adsorbent.
3. Coats the gastric mucosa.
4. Does not cause constipation or diarrhea.
5. Produces no acid rebound or other objectionable side effects.

**RESINAT** has been called "the closest approach to the ideal antacid."

**RESINAT** is available in Capsules (0.25 Gm.), Tablets (0.5 Gm.), Powder (1 Gm.).



Gastrophotograph of mucosa coated by Resinat.



Gastrophotograph of mucosa coated by other substance.

1. Weiss, S., Espinal, R.B. & Weiss, J.: Therapeutic Application of Anion Exchange Resins in the Treatment of Peptic Ulcer, Review of Gastroenterology, 16:501-509, June, 1949.

# RESINAT

RESINAT PATENT PENDING

*completely nontoxic anion exchange resin*

## FOR PEPTIC ULCER

THE NATIONAL DRUG COMPANY, PHILADELPHIA 44, PA.

Manufacturers of



Pharmaceutical,  
Biological and  
Biochemical Products  
for the Medical Profession

*Kindly mention the Review when writing to Advertisers*

*Literature and  
samples available*



*Foundation for hemoglobin regeneration . . .  
and Improved Well-Being!*

## HEMOSULES\* *the preferred hematinic...*

'WARNER'

HEMOSULES\* 'Warner' contains the several hematopoietic factors of established importance in blood regeneration for obtaining optimal results in hypochromic anemias.

HEMOSULES\* 'Warner' are high-potency, vitamin-rich capsules which also contain liver concentrate and highly absorbable ferrous sulfate.

**Each HEMOSULES\* capsule provides:**

Ferrous sulphate, Dried U.S.P. . . . .	162.0 mg (2.5 grs)
Liver concentrate (1:20) . . . . .	162.0 mg (2.5 grs)
Folic acid** . . . . .	0.75 mg
Thiamine hydrochloride (vitamin B <sub>1</sub> ) . . . . .	1.0 mg
Riboflavin (vitamin B <sub>2</sub> ) . . . . .	1.0 mg
Niacinamide† . . . . .	4.0 mg
Pyridoxine hydrochloride (vitamin B <sub>6</sub> )** . . . . .	0.5 mg
Calcium pantothenate** . . . . .	0.5 mg
Ascorbic acid (vitamin C) . . . . .	15.0 mg

HEMOSULES\* are indicated in all secondary anemias due to or accompanying impaired absorption or assimilation, nutritive inadequacy, increased requirements in obstetrical patients, gynecological and gastroenterological disorders, surgical operations, and infectious diseases.

HEMOSULES\* 'Warner'—hematinic capsules—are available in bottles of 96, 250 and 1,000 at all leading pharmacists.

**WILLIAM R. WARNER & CO., INC.**  
New York St. Louis

\*Trade Mark

\*\*The need for pyridoxine hydrochloride, calcium pantothenate and folic acid in human nutrition has not been established.

†The minimum daily requirement for niacinamide has not been established.



Amphojel—  
double action  
with a

single

purpose



Adequate protection for the peptic ulcer patient: this is the single purpose of **Amphojel**®—Aluminum Hydroxide Gel, Alumina Gel Wyeth—unique two-gel preparation. Amphojel's "antacid gel" provides **chemical** protection by reacting with gastric acid to reduce acidity to noncorrosive levels. Amphojel's "demulcent gel" provides **physical** protection and promotes healing.



WYETH INCORPORATED, PHILADELPHIA 3, PA.